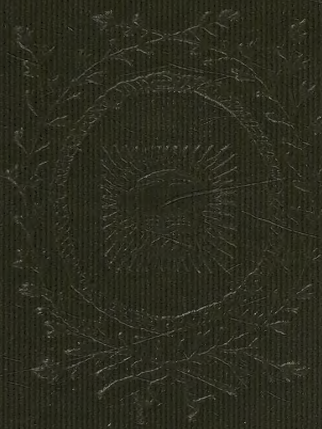

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CULTURAL CHANGE

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EDITED BY

EDWARD ALSWORTH ROSS

University of Wisconsin

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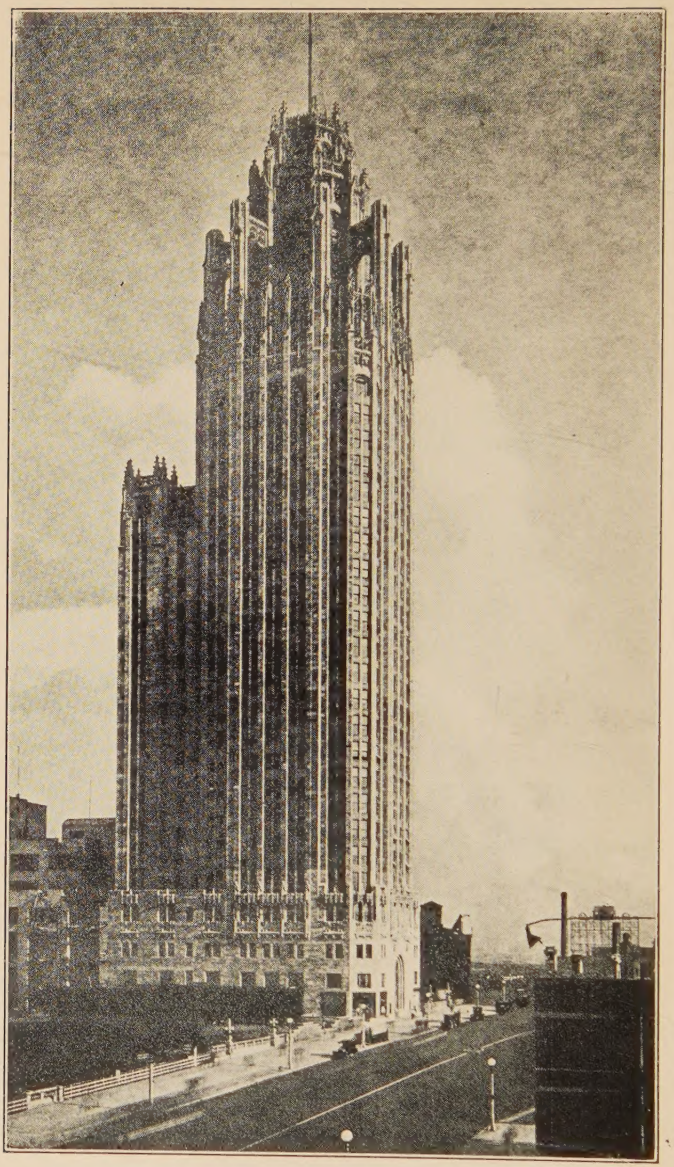

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CULTURAL CHANGE

BY

F. STUART CHAPIN

PROFESSOR OF SOCIOLOGY, UNIVERSITY OF MINNESOTA

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To My Wife
Eula Pickard Chapin

PREFACE

It is customary to review the contents of a book in the preface. In this book a survey and summary is presented in the final chapter.

The author is indebted to his colleagues and graduate students at the University of Minnesota for constructive and critical discussions of many of the hypotheses presented. The author is particularly indebted to his colleague Mr. Harold R. Hosea for assistance in reading proof and for preparation of the indexes. To the editor of the series, Professor Edward A. Ross, the author is indebted for many helpful suggestions. To his wife he is indebted for assistance in preparing the manuscript. Acknowledgments are due the editors of the *American Journal of Sociology, Social Forces, Sociology and Social Research,* and the *Scientific Monthly,* for permission to reproduce materials previously published in articles.

For inadvertent errors the author alone is responsible. It is obviously impossible for the author to be a specialist in all the fields covered by this book. Consequently, he must ask the indulgence of those who have special knowledge for any errors of fact or mistake that may have arisen through references to other historical authorities—errors which have escaped his diligent effort at accurate presentation.

F. Stuart Chapin

Minneapolis, Minnesota

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PART I

THE PERSPECTIVE OF MAN'S PAST

"Men learn from history that
men never learn from history"

CULTURAL CHANGE

CHAPTER I

THE ANTIQUITY OF MAN

A ROMAN ILIUM with a marble temple to Athena stands upon a hillock not far from the seacoast of western Asia Minor. Learned archæologists had passed it by. It remained for Schliemann, with his firm belief that the myth and tradition of ancient Troy held a large kernel of truth, to begin digging there in 1870. He was certain that Troy once stood upon this site because it fitted Homer's description, and sure enough, his faith was justified, for excavation disclosed nine successive settlements. Just beneath the Roman buildings there lay the remains of two Hellenic villages which flourished between 1000 B. C. and the Christian era. As the work progressed, the ruins of the whole series of nine settlements, built one above another, were unearthed. Lowest of all was a rude village, probably inhabited about 3500 B. C. and merging into the stone age. The sixth city from the bottom of the series is thought to have been Homer's Troy, which flourished about 1500 to 1000 B. C. The mighty circuit wall of this city was built of massive ashlar masonry and had imposing towers. After his discovery of the site of Troy at Hissarlik, Schliemann went to the mainland of Greece and excavated Tiryns and Mycenae in Argolia, where he found evidences of a civilization contemporary with that at Troy.[1]

On the side of a high hill on the northern slopes of the

[1] Schuchhart, *Schliemann's Excavations*, ch. 1; Hawes, *Crete, The Forerunner of Greece*, introd.

Cantabrian mountains in the province of Santander, northern Spain, there is a great grotto which opens into a cave of magnificent dimensions. Since the year 1908, the archæologists Breuil and Obermaier have found positive evidence of human habitation in thirteen ascending levels over a period estimated at the present time as not less than fifty thousand years! In this grotto of Castillo the rough hunters of the early stone age found shelter. Tribe after tribe successively repaired to and abandoned the site. On the floor of the grotto, successive accumulations of debris, fire-stones, bones, and innumerable flint and stone implements, bear witness to human habitation. Cave loam and great blocks of stone, falling over the entrance of the cavern and mingled with the debris of human occupation, reach a height of forty-five feet, so that later inhabitants used only the entrance to the cavern or were even crowded under the very roof of the grotto at the sides. Osborn says, "This station . . . is a monumental volume of prehistory, read and interpreted by the archæologists almost as clearly as if the whole record were in writing." [2]

What a different view of man's antiquity one gets from the site of Troy and the cave of Castillo! The former takes us back a scant five thousand years. The latter takes us back fifty thousand years! The perspective of one is ten times that of the other. Says Robinson in commenting on the significance of recent archæological and anthropological discoveries, "From this point of view the historian's gaze, instead of sweeping back into remote ages when the earth was young, seems now to be confined to his own epoch. Rameses the Great, Tiglath-Pileser, and Solomon appear practically coeval with Cæsar, Constantine, Charlemagne, St. Louis, Charles V, and Victoria; Bacon, Newton, and Darwin are but the younger contemporaries of Thales, Plato and Aristotle." [3]

[2] *Men of the Old Stone Age,* 1923 ed., p. 165.
[3] *History,* p. 22.

Just as a small and comprehensible solar system has expanded under the magic touch of modern science into the stupendous magnitudes of the sidereal universe, so the history of mankind begins to take on a vastness and a majesty of sweep hitherto undreamed. Let us then dig deeper than Castillo.

1. The Origin of Man

Since naturalists trace the origin of different forms of animal life to adaptive modification and descent, it is only going one step further to apply the same reasoning to the human species and to account for man as descended from some lower animal form now extinct. Darwin advanced this theory in his *Descent of Man*. Since Darwin's day much evidence has been gathered to support the doctrine of descent. The evidence of evolution is now based upon the discoveries of the explorer, the paleontologist, the anatomist, the embryologist, and the physiologist. Natural scientists regard this body of testimony as constituting a confirmation of the theory of evolution. For certain forms of life it is, indeed, quite conclusive.[4] We may now concern ourselves with a brief examination of the chief evidences for the doctrine that man is descended, in common with other animals now living, from some lower and extinct form.

The success of any demonstration that man is related by descent to some lower creature depends largely upon our ability to reconstruct the series of related forms. When the doctrine of the descent of man was first advanced, superficial and popular writers immediately jumped at the conclusion that naturalists believed that man was descended from the "monkey." This, of course, is quite absurd, as obviously man could not be descended from a form of life now living. The ape and the members of the monkey family, together with man, are probably descended

[4] But this is a matter that the reader can look up for himself in the many books now available upon the subject.

from some generalized apelike form long since perished from the earth. They may have a common ancestral stock: one is not descended from the other.

The human species, or Hominidæ, is not descended from the gorilla or the chimpanzee, but the "ascent of the Hominidæ is in an independent line from some long since extinct generalized form, from which the other branches also spring in independent lines. All have some features in common, while each presents some special characters. The points of resemblance between the Hominidæ and the Simiidæ are far more numerous than between the Hominidæ and any other group." [5] Keane infers from this that the divergence of the higher groups took place in the sequence indicated in the following classification. For this reason the study of man from the physical side is confined to his relation to the higher apes.[6]

It has been customary in modern zoölogical classification to detach from the class mammals, the large and dispersed group of apes and half-apes (Lemurs) to constitute the independent order of *primates,* so named by Linné. Systematists divide the order into two sub-orders, *lemuroidea* and *anthropoidea,* and subdivide the *anthropoidea,* the manlike forms, into five families—*hapalidæ, cebidæ, cercopithecidæ, simiidæ,* and *hominidæ* (human species).[7] Keith [8] suggests a somewhat different order as shown in Figure 1.

The reason for asserting that men are primates and are closely related to the Simiidæ is that, part for part, the skeletons, pelvis, ribs, hands, feet, spinal columns, teeth, and bones of the skull are the same in all fundamental regards. In all essential features the sets of bone parts are closely similar.[9] Now if we turn to structures other than

[5] Keane, A. H., *Ethnology,* 1896, p. 19.
[6] *Ibid.,* p. 20.
[7] *Ibid.,* p. 17.
[8] Keith, A., *The Antiquity of Man,* 1916 ed.
[9] Romanes, G. J., *Darwin and after Darwin,* I, The Darwinian Theory, 1901, pp. 74–93; Metcalf, M. M., *Organic Evolution,* 1911, pp. 167–172.

the skeleton, we find there are some remarkable similarities in certain minor details. For example, we think of the hairiness of the apes as distinguishing them rather sharply from man, but in reality the whole of the human body is covered with hair, except the palms of the hands, the soles of the feet, and the backs of certain terminal joints; these

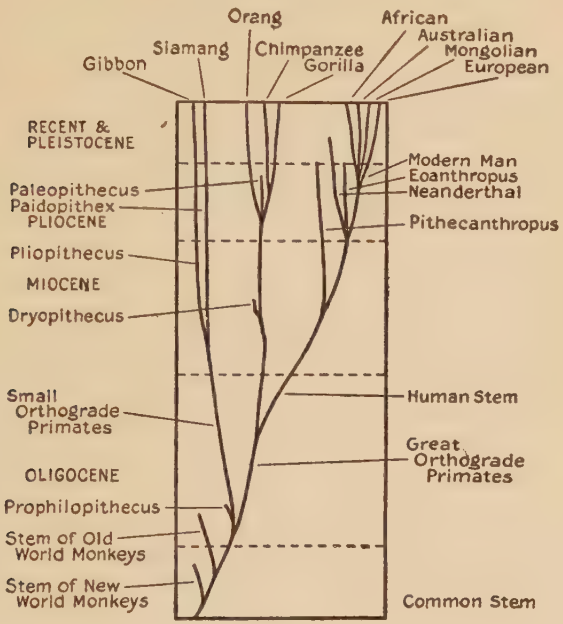


FIGURE 1

Genealogical Tree of Probable Lines of Descent

(After Keith)

same portions are hairless in apes. Moreover, the slant of the hair in the several regions of the body, notably on the arms, is the same that we observe in apes. In apes and man there is reminiscence of the ancestral functional tail the coccyx; in fact, a reduced tail. Our ears are slightly, if at all, movable, yet we retain in a vestigial condition the muscles which in some ancestor must have served to move the ears. The vermiform appendix is less developed in

man than in the apes, and is relatively larger in the human fœtus than in adult man. Moreover, at the inner angle of the human eye is a fold of tissue which has little or no meaning unless it be explained as a remnant of that third eyelid which in many lower vertebrates, for example, birds, is greatly developed and can be drawn over the whole eyeball inside the outer eyelids. Unless we regard these vestigial structures in man as the traces of an earlier condition through which our ancestors have passed, they have no intelligible meaning.

The study of embryology reveals many points of resemblance between the human embryo, in the earlier stages of its growth, and the embryos of a number of other vertebrates.

There is an epigram among zoölogists that the individual climbs up his own genealogical tree. This bears, of course, only a general interpretation. Yet there is little doubt that the development of the individual is in some measure to be explained as a condensed recapitulation of the presumed racial evolution. In other words, the individual in his embryological development quickly passes through the lower stages and the intermediate forms which it took millions of years for the species to achieve. In this sense, the embryological development of the individual is a recapitulation of the life history of the species.

During the early life of the human infant there are indications of considerable interest. In the development of the child after birth the spinal column has a single curve, as it does in apes and monkeys, instead of the S-shaped curve seen in adult human beings. The baby holds his feet in a position characteristic of the apes. For a few weeks after birth, the child has a remarkably strong finger-grip, recalling the strength with which the young apes grasp the mother's hair, as she climbs with them among the trees. The young baby is able to sustain his own weight by his

hands. When he hangs in this manner he often shows a position of the legs which is strikingly apelike.

There is much more evidence along anatomical and embryological lines, but the character of this evidence has been sufficiently illustrated. The whole structure of man shows that he has arisen by differentiation from lower vertebrates. We do not yet know all the stages through which the human body passed in the process of its evolution, and we do not know many of the details by which his mental traits have risen from the lower condition of intelligence seen in other vertebrates; but the evidence which we do possess presents no serious reason for believing that the method of their evolution has been different in any fundamental regard from the methods by which the minds and bodies of other animals have been developed. In common with other animals "men often fail in the struggle for existence, become submerged and disappear." Natural selection operates among mankind to exterminate the unfit and to preserve the better adapted individuals who transmit to their children the characteristics which gave them advantage. Sexual selection is probably more operative in man than in any other animal species. Among men, especially civilized men, choice in marriage has come to be based less upon the physical attractions which appeal to the lower animals, and more largely upon intellectual and moral attractions. Sexual selection thus serves to increase and perpetuate these highly important characteristics.

2. The Stratigraphic Method for the Study of Prehistory

We have now reviewed the evidence which leads us to believe that man is related by distant ancestry to forms of life still extant. This evidence constitutes a presumption which justifies us in the belief that we shall discover the intermediate forms and so partially complete the series of

man's descent. The gaps in this series must be filled by the reconstructed skeletons of bone remains of prehistoric man. In consideration of the fact that bone usually decays within a comparatively short time, the chances are slight of finding remains in a sufficient state of preservation to constitute positive evidence. Under certain peculiar conditions, however, these bone remains are preserved for great periods of time. They must be protected from the action of the air, the erosive action of water, and from the destructive action of insects and certain plant agencies which cause decay. The necessary conditions are present in dry caves and where natural agencies have deposited layers of sand and gravel. Hence it is that the bone remains of prehistoric man are most frequently found in undisturbed boulder-clays and drift, or imbedded in the floor of some cave of great antiquity.[10] Investigation and discovery have brought to light a considerable number of bone remains of prehistoric man. Let us now examine this evidence to ascertain how far we may expect to reconstruct the intermediate steps in the descent of man.

In the first place how are we able to tell with certainty whether any bone remains which we find are reminiscent of prehistoric man? Is it not possible that they are simply the remains of some relatively modern pathological individual and not of some lower type of man? The associated circumstances are of utmost importance. If the particular part of a skull which we have discovered was found imbedded many feet below the surface in *undisturbed* beds of sand or gravel, and geologists tell us the age of the sand bed, it follows that the remains must be at least as old as the sand bed. Moreover, when these remains are found associated with rough stone implements of exceedingly primitive workmanship and with the bones of such extinct animals as the cave bear, or the Etruscan rhinoceros, or the wild

[10] For a list of stratigraphic sources, see Appendix I of MacCurdy's *Human Origins.*

boar, or the ancient elephant, or perhaps with several of these together, we are face to face with pretty conclusive evidence of great antiquity. Geologists are able to estimate with approximate accuracy the age of certain deposits of sand or gravel by determining the rate at which similar beds are being formed at the present day through the agency of rivers or glaciers. In this way we may be certain of the age of these remains without unreasonable error. It is to be remembered that geologists measure time in thousands and millions of years. They divide the time of the earth's development from an uninhabitable sphere to its present state into several great epochs, in accordance with the type of rock formation existing. The Paleozoic or Primary and the Mesozoic or Secondary are the vast epochs when only the most rudimentary forms of life existed. It is the Tertiary and the Quaternary, the periods during which the higher mammals appeared, that are of interest to us. As will be seen from Figure 2, the early or lower Quaternary began about five hundred thousand to three-quarters of a million years ago. The first fossil remains of early man come from the geological formation of this period.

3. Glacial and Interglacial Stages

Before we may hope to have a clear understanding of the antiquity of man, there is some further evidence of a geological nature which we shall have to examine.

It is important to know the main facts and theories of the glacial periods, because it is the duration and frequency of occurrence of these ice ages which give us the most trustworthy evidence of the antiquity of man. If we can learn the age of certain glacial deposits by measuring their rate of formation, we are in a position to say something definite as to the age of human remains and implements found beneath them. Many ages ago there were vast sheets of continental ice mantling large portions of Europe and North America, just as Greenland is mantled to-day. It is

not so generally realized, however, that the cold was not constant during the age of ice. The first southward advance of the Arctic ice-sheet was followed by a period of retreat during which temperate conditions prevailed. In regions once inhabited by cold climate fauna, one finds remains of creatures whose structure and habits show them to have been denizens of warmer lands. There were climatic fluctuations with alternate advance and retreat of the ice. Modern geologists count four glacial epochs covering the period of the Pleistocene (see Quaternary in diagram), three interglacial periods, and one post-glacial (from the close of the Old Stone Age to the present). The causes of these great climatic fluctuations which brought about the ice ages are variously explained by geologists in accordance with several hypotheses.[11] In the course of these ice ages the glaciers pushed southward or downward, gouging out valleys as they proceeded in their slow and ponderous course and carried along with them masses of stone and rock fragments which were finally deposited along the melting front or lateral areas of the glacier. Glacial streams flowed from under the slowly moving ice and carried fine detritus and sand many miles beyond the ice line, eventually depositing this material in deltas or flood plains and burying deep all small objects lying upon the surface.

Estimates of the duration of the ice age show considerable variation. Osborn [12] has compared these estimates and arrives at the following hypothesis of the relative duration of the glacial stages, which seems consistent with more facts significant for the early history of man than any other hypothesis:

8. Post-glacial time, from 25,000 B. C. to the present.
7. *IV. Glacial stage*, lasted 25,000 years and began some 50,000 years B. C. Neanderthal man?

[11] See Chamberlain and Salisbury, *Geology*, vol. iii, pp. 424–446.

[12] *Op. cit.*, pp. 22–23; other estimates of Pilgrim, cited by MacCurdy, allow 1,290,000 years for the glacial epochs.

6. Third interglacial stage, lasted 100,000 years, and began some 150,000 years B. C.
5. *III. Glacial stage,* lasted 25,000 years and began some 175,000 years B. C.
4. Second interglacial stage, lasted 200,000 years, and began some 375,000 years B. C. Heidelberg man?
3. *II. Glacial stage,* lasted 25,000 years and began some 400,000 years B. C.
2. First interglacial stage, lasted 75,000 years, and began some 475,000 years B. C. Piltdown man?
1. *I. Glacial stage,* lasted 25,000 years and began some 500,000 years B. C. Pithecanthropus?

As the glacial streams contracted in the interglacial and post-glacial stages, they cut into the earlier river beds and formed narrower channels. Thus "river terraces" were formed in descending series of levels along the sides of valleys, and sometimes on four different levels corresponding to the glacial stages. Such evidences as these supply a geological chronology for lesser divisions of time and are particularly valuable in connection with "loess" deposits found upon the terraces. During the three warm or cold arid periods of Pleistocene Europe, prevailing westerly winds distributed this loess (fine sand and clay dust) over northern Germany and covered river terraces, plateaus and uplands. Fossil remains of mammals as well as primitive flint implements are found in these loess deposits (Eolian deposits). Finally, loam, washed down over the original sand and gravel terraces from surrounding hills and meadows, constituted a deposit of still later date.

4. Fossil Men

The problem of the geographical center from which man migrated finally to populate the earth is still unsolved. Tradition has designated Central Asia as the place of dispersion. In Central Asia are found the remains of sand-buried cities so ancient that the very traditions concerning them

have perished. Moreover, the wild progenitors of our domestic animals—horses, cattle, sheep, goats, swine, dogs, camels, buffalo, and fowl—had their habitat in Central Asia.

But there are other considerations. Geologists tell us that the land formation of the present continent of Europe underwent many changes in the later Tertiary and during the early Quaternary periods. Coincident with the glacial and interglacial stage there seem to have been alternating subsidences and upheavals of sections of the continent. There appears, however, to have been a strip of dry land fairly constant in its outline which extended from the valley of the Thames and the Rhine in northwestern Europe to the present island of Java at the southeast of Asia. It is in this strip of territory that the most important discoveries concerning early man have been made.

The first startling discovery of the existence of an early example of mankind differing markedly from any living, and of a decidedly lower, type, was made in 1857, when part of a skull was found in a cave near Düsseldorf, Germany. The bones consisted of the upper portion of a cranium remarkable for its flat retreating curve, the upper arm and thigh bones, a shoulder blade and collar bone, and rib fragments. There was at first some difference of opinion as to its authenticity. Some naturalists maintained that it was a pathological specimen. But its normal character has since been fully demonstrated. Huxley conceived the Neanderthal man as short of stature but powerfully built, with strong, curiously curved thigh bones so constructed that he must have walked with bended knees, and possessing heavy brow ridges and a heavy brutal jaw with receding chin. Although the Neanderthal man was of the small stature of five feet three and a half inches, he was probably a mighty hunter, able to contend with the rudest weapons against the rhinoceros, mammoth, cave bear, and other beasts. Since the discovery of this skull near Düsseldorf, other specimens of the same general type have come to

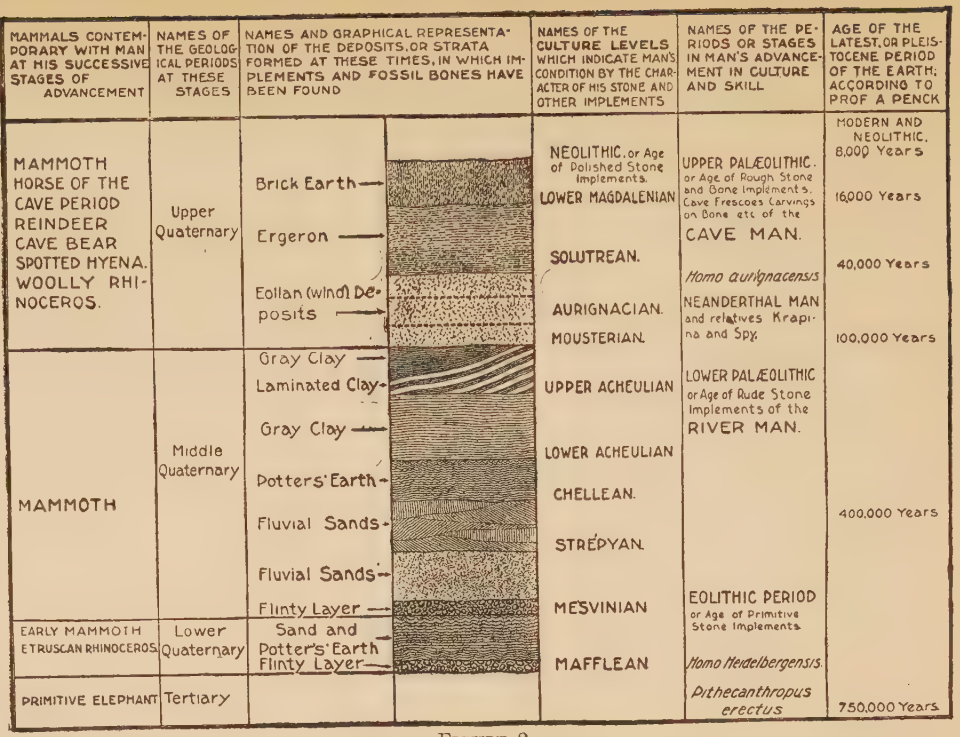

MAMMALS CONTEMPORARY WITH MAN AT HIS SUCCESSIVE STAGES OF ADVANCEMENT
NAMES OF THE GEOLOGICAL PERIODS AT THESE STAGES
NAMES AND GRAPHICAL REPRESENTATION OF THE DEPOSITS, OR STRATA FORMED AT THESE TIMES, IN WHICH IMPLEMENTS AND FOSSIL BONES HAVE BEEN FOUND
NAMES OF THE CULTURE LEVELS WHICH INDICATE MAN'S CONDITION BY THE CHARACTER OF HIS STONE AND OTHER IMPLEMENTS
NAMES OF THE PERIODS OR STAGES IN MAN'S ADVANCEMENT IN CULTURE AND SKILL
AGE OF THE LATEST, OR PLEISTOCENE PERIOD OF THE EARTH; ACCORDING TO PROF A PENCK
MAMMOTH
HORSE OF THE CAVE PERIOD
REINDEER
CAVE BEAR
SPOTTED HYENA.
WOOLLY RHINOCEROS.
Upper Quaternary
Brick Earth
Ergeron
Eolian (wind) Deposits
NEOLITHIC, or Age of Polished Stone Implements.
LOWER MAGDALENIAN
SOLUTREAN.
AURIGNACIAN.
MOUSTERIAN.
UPPER PALÆOLITHIC, or Age of Rough Stone and Bone Implements. Cave Frescoes Carvings on Bone etc of the CAVE MAN.
Homo aurignacensis
NEANDERTHAL MAN and relatives Krapina and Spy.
MODERN AND NEOLITHIC. 8,000 Years
16,000 Years
40,000 Years
100,000 Years
MAMMOTH
Middle Quaternary
Gray Clay
Laminated Clay
Gray Clay
Potters' Earth
Fluvial Sands
Fluvial Sands
Flinty Layer
UPPER ACHEULIAN
LOWER ACHEULIAN
CHELLEAN.
STREPYAN.
MESVINIAN
LOWER PALÆOLITHIC or Age of Rude Stone Implements of the RIVER MAN.
EOLITHIC PERIOD or Age of Primitive Stone Implements
400,000 Years
EARLY MAMMOTH
ETRUSCAN RHINOCEROS
Lower Quaternary
Sand and Potter's Earth
Flinty Layer
MAFFLEAN
Homo Heidelbergensis.
PRIMITIVE ELEPHANT
Tertiary
Pithecanthropus erectus
750,000 Years

FIGURE 2

Diagram Illustrating the Character and Relative Age of Human Remains and the Quaternary Deposits in Which They Have Been Found.

(Adopted from McCurdy and Rulet.)

light, serving to indicate how widespread was the Neanderthal race of men. In 1866, part of a jaw quite different from the typical jaw of to-day was found at La Naulette, Belgium; and in 1886, at Spy, Belgium, specimens were discovered in which the Neanderthal type of cranium was associated with the Naulette type of jaw. The most perfect specimen of the type was discovered by two competent observers at La Chapelle-aux-Saints in 1908. In 1921 a human skeleton of very primitive type was discovered in Bone Cave at Broken Hill, northern Rhodesia, Africa. This man was probably a variant of the Neanderthal type. Some thirty specimens of this primitive race have been found.[13] These discoveries indicate the wide distribution of this primitive race.

In 1891 to 1892, the island of Java, itself a remnant of an extended continental mass of remote time, gave up a relic of the nearest to an intermediate form in the series of human descent yet discovered. Here in the center of the island, Dr. Dubois found buried in Pleistocene beds to the depth of about forty feet below the surface, the upper portion of a skull, a tooth, and a thigh bone. It was fortunate that these most distinctive portions of the human frame should have been thus preserved, because from these specimens we are able to reconstruct the creature and to say with assurance that his walk was erect in manlike posture, that he had mental power considerably above the ape, and that his powers of articulate speech were somewhat limited. This man stood half-way between the anthropoid and the most primitive of existing men. Years before, the German naturalist Haeckel had applied the name Pithecanthropus, the ape-man, to a hypothetical form which would walk erect, have a higher intellectual development than the manlike apes, but which would not yet possess articulate

[13] For a full discussion of these evidences as well as the physical characteristics of the Neanderthal race, see Osborn, *op. cit.*, pp. 214–244; Keith, *op. cit.*, pp. 122–159; and MacCurdy, *op. cit.*, Vol I, pp. 350–379.

speech. The Javan form seemed to fulfil Haeckel's conception and has come to be known as the *Pithecanthropus Erectus*. These discoveries have partially filled the gaps in our knowledge of the descent of man from earlier ancestral forms.[14]

In 1907 a human jaw of great antiquity was discovered in the sands of the Mauer River near Heidelberg. This jaw lay in undisturbed stratified sand at the depth of about sixty-nine feet from the summit of the deposit. It is very different from that of the modern man, being wide, low, massive, and devoid of a chin, features in which it resembles the jaw of an ape. Yet the teeth are typically human in arrangement and character, relatively small when contrasted with the massive supporting bone, but actually large when contrasted with those of modern man. The features are so distinctive that the discoverer, Dr. Schoetensack, considers the specimen as representing a distinct species of man. Lull finds in this important specimen an admirable illustration of the law of Haeckel, wherein the life cycle of the individual is shown to recapitulate in vastly briefer form the evolutionary history of the race. This is borne out by the fact that the teeth of the Heidelberg man are in their stage of development comparable to those of a youth of fourteen years or less, while their degree of wear indicates a fully attained manhood. Thus the Heidelberg man, a full adult for his time and generation, typifies none the less the youth of humanity.

During the year 1912, a series of fragments of a human skull and a jaw bone were found associated with eolithic implements and the bones of extinct mammals in Pleistocene deposits on a plateau eighty feet above the river bed at Piltdown, Fletching, Sussex, England. This discovery was made by Mr. Charles Dawson and Dr. A. S. Woodward. The remains were of great importance, because, while the

[14] Full discussion of these discoveries will be found in Osborn, pp. 72–102; Keith, pp. 257–271, 228–244; and MacCurdy, pp. 313–322 of Vol I.

cranium was typically human, its cubic capacity was relatively small, about four-fifths that of the average European skull and twice that of the highest ape. The jaw was similar to the Heidelberg jaw although somewhat less massive, but the chin was even more negative than the Heidelberg chin. There is a controversy over whether the jaw is that of a man or of an ancient species of chimpanzee. Osborn is inclined to the latter view, while Keith and MacCurdy are convinced that the Piltdown fragments belong to the same individual and indicate the existence of a race of early men more primitive than the Neanderthal race and according to Woodward dating back some 500,000 years, perhaps earlier than the Heidelberg type.[15]

Other skulls and bone parts of prehistoric man have been found and are preserved in museums, but the specimens described are sufficient to illustrate the type of evidence they constitute. The available materials for the study of early man, besides his own remains, are his implements and his monuments or works of art. But we must remember that the earliest men left no archæological remains because in all probability they used unchipped flints and wooden implements. This brings us to a consideration in the next chapter of the first tangible evidences of social and cultural evolution in contrast to organic evolution.

Before attempting a description of cultural change it is important to get clearly in mind the distinction between the biological and the cultural, and to recognize that psychological facts and processes overlap these two fields of natural phenomena. Thus far our treatment has been chiefly concerned with the structural and anatomical aspects of man's biological evolution. But as soon as we view the human organism in action we find ourselves observing its behavior, and this is a psychological as well as a physiological process. Moreover, the psychological merges into the

[15] Osborn, pp. 130–144, 512–513; Keith, pp. 293–355; and MacCurdy, Vol. I, pp. 323–340.

cultural. Thus we may regard the psychological as a sphere intermediate between as well as overlapping both the biological and cultural spheres. Figure 3 will help clarify the point. We may regard the sphere of the biological, which is in general concerned with man's original nature, as including, besides anatomical structure, such physiological traits as reflexes, instincts, emotions, sensations, and feelings. Inherited structure underlies these traits, but since they are functional aspects of structure, and appear in be-

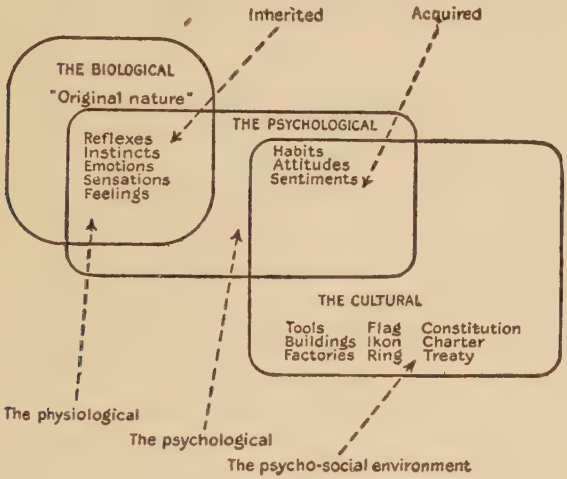


FIGURE 3

Separation of the Biological, Psychological, and Cultural

havior, they are also within the sphere of the psychological. On the other hand, such psychological traits as attitudes, sentiments, and habits are acquired and not inherited, hence these are not biological traits. Furthermore, we recognize that the culture of a group of people is largely expressed in terms of attitude, sentiment, and habit. Consequently these psychological categories are also phases of the phenomena of culture. Finally, written language is a distinctly cultural phenomenon, and, although it is evidence of some human being's past behavior, it is in itself not be-

havior and it is not a psychological phenomenon. Similarly, such symbolic culture traits and objects as ikons, idols, and flags, and such utilitarian culture traits as buildings, tools, and factories, are all important forms of culture but they are not forms of behavior or physiological processes. They were once mental patterns and ideas. They are now the projected patterns of these ideas fabricated out of material substances. With these distinctions in mind it will be possible to approach the study of culture and to recognize that the parts played by biological or native equipment, by acquired traits, and by cultural traits are relative. In this way we may hope to avoid confused thinking about these three human life phenomena, which, although so closely interwoven in action and in result, do none the less seem to follow different laws of change.

CHAPTER II

THE ACCUMULATION OF CULTURE

MORE important, perhaps, than a characteristic anatomical structure as evidence of man's origin, is the appearance of culture. Nowhere in the rest of nature do we find a phenomenon like culture. No other form of life has fashioned tools and built institutions. No animal but man has developed articulate speech and language. MacCurdy finds three factors requisite for the transition from anthropoid to man: a hand, a brain fairly balanced upon a spinal column normally approximately erect, and stereoscopic vision. Given these three factors, a combination that probably occurred in the late Tertiary epoch, culture inevitably follows.[1] Man has been called the culture-building animal. Tylor [2] defined culture as ". . . that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society."

Better than Tylor's definition is Ellwood's: "Culture is transmitted socially, that is, by communication, and gradually embodies in a group tradition of which the vehicle is language. Thus culture in a group is a matter of habits of thought and action acquired or 'learned' by interaction with other members of his group. Culture includes all of man's acquired power of control over nature and himself. It includes, therefore, on the one hand, the whole of man's material civilization, tools, weapons, clothing, shelter, machines, and even systems of industry; and, on the

[1] MacCurdy, *Human Origins*, Vol. I, p. 431.
[2] *Primitive Culture.*

other hand, all of non-material or spiritual civilization, such as language, literature, art, religion, ritual, morality, law, and government. The very mention of these indicates that man as a social creature is largely a cultural product. We must understand culture, therefore, if we are to understand the direction and goal of social evolution; for it is culture which has made and will make our human world."[3]

It is evident that the rich and varied "stuff" of culture constitutes a vast and enticing field to the research worker and the student. In this treatment, however, some delimitation of the field is necessary. We shall, therefore, confine our treatment to a discussion of only three phases of culture: tools and implements, language, and institutions.

1. Evolution of Implements

Implements form a valuable part of our evidence of early culture because they are most numerous and widespread, and are found under conditions which afford the best proof of their antiquity. When we discover chipped stone implements buried beneath the drift and undisturbed boulder clay which some glacier gouged out of the valley wall and piled up hundreds and thousands of years ago, we must regard the age of the glacial deposit as a measure of the age of the stone implements. Or, if an excavation in the floor of some ancient cave uncovers humanly fashioned stone tools under a thick stalagmite formation, we can only regard the undisturbed position of the implements as an indication of extreme age. Many primitive peoples today live upon shell-fish and leave the discarded shells near their dwellings. As time goes on the pile of shells accumulates. We call these heaps of shells "kitchen-middens." If we find under such a kitchen-midden, among the shells, rude unpolished spear heads, these implements must be at least as old as the accumulation. In Tierra del Fuego (Eliz-

[3] *Cultural Evolution*, 1927, p. 9.

abeth Island), there are kitchen-middens, upon old beaches raised to considerable heights above the present sea-level, so ancient that the shells of which they are composed are extinct, or no longer the same as those in the surrounding waters. But while the position in or under the drift which some glacier or glacial river has transported and finally deposited in ever accumulating layers constitutes quite conclusive evidence, the position under stalagmite beds and kitchen-middens does not furnish as reliable proof of antiquity. The growth of stalagmite beds is irregular and depends upon conditions which are subject to some variation. In the case of the kitchen-midden, some shells are accumulated with great rapidity so that in a comparatively short time a considerable pile is made. Marett tells of a cave in Jersey, near the bay of St. Brelade, where anthropologists dug down through some twenty feet of clay and rock rubbish, probably carried there in the course of the last ice age by some glacial torrent, and discovered a prehistoric hearth with the large stones that had propped up the fire, and even some ashes. Bones were found in a heap of food-refuse, which when examined proved to be the remains of the woolly rhinoceros, the reindeer, of two kinds of horses, of a wild ox, and of a deer. Thirteen human teeth were found in the food-heap. But Mr. Marett was unable to tell whether man or beast did the eating. These teeth were large, the kind that would go with an immensely powerful jaw, needing a massive brow-ridge to counteract the strain of the bite, indicating in general the Neanderthal type, large-brained perhaps, yet quite apelike. The diners had also left their knives about—flint implements chipped only on one side.[4]

The chipped flint implements of prehistoric man differ in such a way that we are able to recognize several stages in their development and even to assign the approximate

[4] Marett, R. R., "Anthropology," in *The Home University Library*, H. Holt & Co., 1912, p. 37.

years during which each was in vogue. The rough stone age and the polished stone age are the popular terms for the stages showing the most striking differences in appearance and workmanship. In Figure 2, the most recent geologic epoch, the Quaternary, is divided into the lower, middle, and upper Quaternary, covering a period of some 750,000 years. It will be noticed that in the fourth and fifth columns of the diagram there is a somewhat corresponding division, only under the more scientific names of the eolithic period, the lower paleolithic period, the upper paleolithic period, and the neolithic period.

The upper and lower paleolithic periods differ in that the lower period is characterized by the evolution of the almond-shaped (amygdaloid) implement, which is unknown in the eolithic period and rare in the upper paleolithic period. This is the typical river-drift implement. The eolithic implements differ from the lower paleolithic in that they are extremely rough, so primitive, indeed, that some archæologists have hesitated to recognize them as the work of man. They are natural flakes, chips, or nodules of flint that bear traces of utilization and of having been fitted to the hand.

Returning to the lower paleolithic period of our diagram, we find that there are "four well defined epochs based on both stratigraphy and the evolution of the almond-shaped implement." These are the Strepyan, Chellean, and the lower and upper Acheulian. The fact that archæologists and anthropologists have found it necessary to distinguish between different types of implements shows that there was a gradual evolution of this very low and rudimentary culture to higher and higher stages. Each of these different periods extended over thousands of years. In the Chellean epoch, the almond-shaped implement is well defined, although the scars left by chipping the two faces are still large and somewhat irregular. It is the regularity and fineness of the chipping which distinguishes the Acheulian from

the Chellean. Indeed, it is "so skilfully done as virtually to eliminate the zig-zag nature of the edge formed by the meeting of the two chipped faces."[5] The men of the old river drift must have had strong arms and skilful fingers, for it must have been difficult to chip a flint pebble along both faces till it took on a more or less symmetrical shape.

The upper paleolithic period is marked off partially by the fact that the flint implements are chipped on one side only. Furthermore, there is the gradual introduction of bone in the making of implements and the appearance of the first beginnings of art. The men of this period lived in caves and along the valley bottoms, for we find the remains of prehistoric man in the valley deposits and in caverns and rock-shelters. Four epochs are recognized, Mousterian, Aurignacian, Solutrean, and Magdalenian. The Neanderthal man, short, powerful, and active, developed the industry of the Mousterian epoch in the direction of improved flint implements and even attempted some engraving, sculpture, and painting. The Solutrean stone industry was highly developed and exemplified much skill in the art of chipping. The arrow point was shaped like a willow leaf with an improvement over some earlier forms made by the introduction of a lateral notch at the base. This art of stone-chipping, perfected in the Solutrean, does not seem to have been as important in the Magdalenian epoch. The industrial life of this epoch is characterized by the use of bone, ivory, and reindeer horn in the making of barbed harpoons and spears. These bone implements are often engraved and carved to represent animals of prey. This somewhat rude art reached a high state of development in the Magdalenian epoch.

In addition to these remains of the cave man we have others even more interesting; remains which go far to tell us of his trained powers of observation and skill of eye and

[5] MacCurdy, G. G., "The Caveman as Artist," *Century*, July, 1912, vol. lxxxiv., p. 440.

hand. The cavern must have been more than a place of safety from wild beasts and a shelter from storms; it must have been a place in which sedentary habits developed the

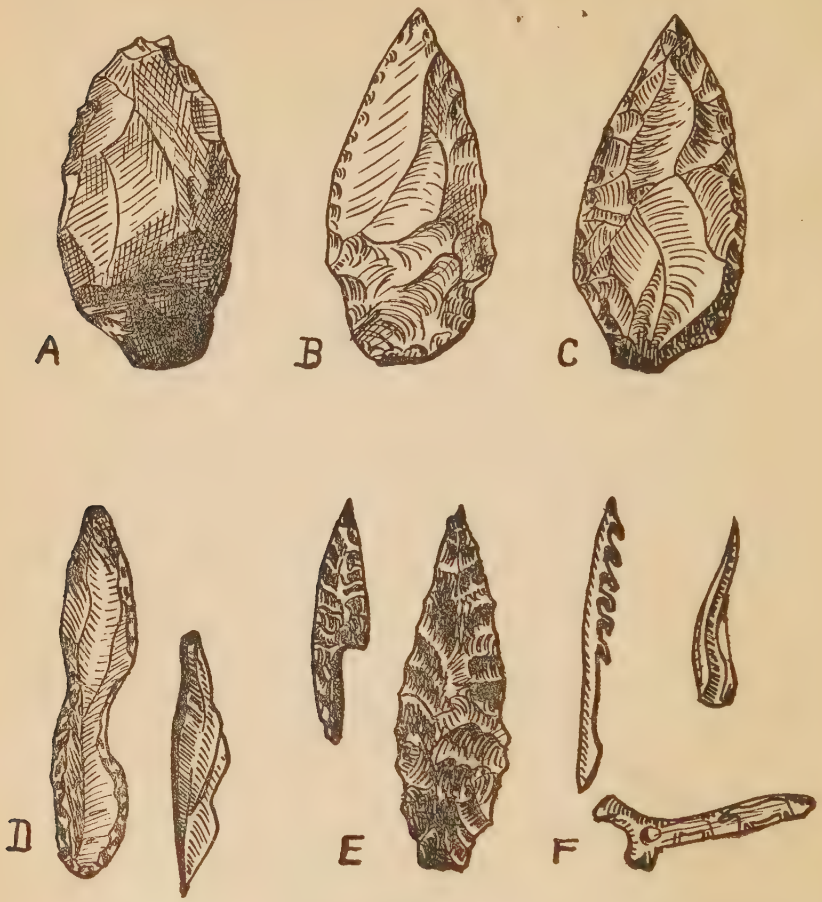


FIGURE 4

Paleolithic Implements (reduced to uniform scale) A. Chellean B. Acheulian C. Mousterian D. Aurignacian E. Solutrean F. Magdalenian

first glimmerings of esthetic ideas, for we find upon the walls of these caves simple drawings and elaborate color paintings of the rhinoceros, bison, and reindeer. Probably

these pictures had religious significance; we do not know for a certainty. Symbolic significance of some sort they undoubtedly did possess. In any event, their artists passed away, as did their traditions, ages before the civilizations of Babylon or Egypt began.

After Cartailhac and Breuil.

FIGURE 5

Map Showing the Location of Prehistoric Caves, all of them Ornamented by Paintings and Drawings.

The map in Figure 5 shows the location of prehistoric caves in France, all of which are ornamented with paintings and drawings. Cavern painting passed through four stages. In the first stage the drawings were simply outlines done with a black or red crayon. In the second stage the first attempts at modeling by shading appear. These drawings are usually monochromatic silhouettes in black. The third phase of development shows an excessive use of color, which weakens the effect of the modeling. Paleolithic painting reaches its zenith in the fourth stage, when several warm colors are introduced to give realism and vigor to the picture. Although the surface upon which the painting is made is

usually scraped and washed, spots are sometimes chosen which give the figures the appearance of a bas-relief. The colors used are brown, red, black, yellow and white. The bison in Figure 6 is done in warm sepia with bright burnt sienna running into the sepia and becoming darker. The art is generally remarkably realistic and the animals are often represented as in active motion.

This cave art is the most striking achievement of paleolithic man. It suffered eclipse, however, since with the passing of the fashion of cavern life men began to devote their energies to other activities. One should keep in mind that the period of the cave men was, in general, a period in which the climate of Europe was extremely cold. Large sections of the northern part of the continent were under ice, and from the highlands of the southern part of the continent glaciers extended down into the valleys, giving rise to glacial streams. It was the age of the mammoth, reindeer, elk, hyena, of the wild horse, the chamois, and the goat. Men and animals must have been driven southward to a warmer zone by the climatic changes and the advancing ice-sheet. With the tempering of the climate the ice-sheet melted back. In its wake, men and animals again pressed north. It required centuries for these changes, and the memory and tradition of a northern habitation must have perished from the minds of these primitive folk. In the intervening centuries the old cave dwellings were partially submerged by glacial drift, so that when the peoples moved north again and the old caverns were rediscovered, the remains of former habitation were buried deep below the accumulated drift. In this way, by a succession of migrations corresponding to climatic changes, remains of human habitations accumulated at different levels in the floor sands of these ancient caverns. We find, therefore, at different levels, implements representing, by the grade of their workmanship, various cultural stages often corresponding to stratigraphical sequence.

From a reproduction by the Abbe Breuil of the original drawing in colors.

FIGURE 6

A Bison at Bay. Done in Warm Sepia with Bright Burnt Sienna Running into Sepia and Becoming Darker

FIGURE 7

Cave Men of the Old Stone Age

There gradually evolved from these crude beginnings of culture in the paleolithic period a new or neolithic culture, which had its beginnings some twelve thousand years ago. Several culture levels, such as the Azilian-Tardenoisian, the Maglemosean, the Campignian, the Robenhausian, and the Carnacian, have been described. Although polished stone implements were once taken as the criterion separating the cultures of the paleolithic and the neolithic periods, it is now accepted that a cluster of culture traits, developing in the neolithic, mark it off from the earlier paleolithic.[6] This cluster of culture traits consists of the following: (1) pottery, (2) the bow and arrow, (3) bone tools, and (4) domestication of animals. Once these basic inventions had been made, culture developed at what appears to have been an ever increasing rate, and we note a Bronze age with beginnings as far back as 5000 B. C. in Babylonia, followed by an Iron age, beginning in Babylonia as early as some 3000 years B. C.

The neolithic men had learned the lesson of patience; they had domesticated the horse, ox, pig, sheep, goat, and dog. The men of the rough stone ages had failed to make this very important step in progress. Fire was generally known and could be artificially kindled. Food, which had been mainly uncooked vegetable matter and the raw flesh of fish and animals in the paleolithic culture, was in this new period largely cooked and obtained by stock breeding and tillage as well as by fishing and the chase. This was a most important gain, for it meant a larger and more certain food supply. And the food supply is always a serious problem among primitive peoples. The men of the polished stone age made implements of diverse types, not rough and irregular like those of their predecessors, but ground smooth and shapely. They were also skilled in spinning and weaving and had considerable success in making pottery. All these arts were foreign to the men of the rough stone ages. Neo-

[6] Kroeber, A. L., *Anthropology*, pp. 410–412.

lithic men left imposing monuments in the form of gigantic upright stones, reminiscent of early religious rites and ceremonies so ancient that even the traditions of their worship have been forgotten. In many parts of Britain they are called "Druid Altars" and are popularly associated with Druidical rites. Besides the monolithic type, there is the polylithic or cell type of monument, used in connection with burial and ancestor-worship. The tomb is composed of several megaliths, one for the floor, others upright or on edge, supporting a horizontal slab which covers the whole space enclosed. Some of these sepulchral chambers are covered with great piles of stones or earth. These monuments are known as barrows. In this period the Swiss lake dwellings were constructed. The prehistoric monuments of the New World are more imposing than these barrows of the Old World. The ruins of palaces, temples, and aqueducts of the ancient Peruvians, and the similar colossal constructions of the ancient inhabitants of Bolivia and Mexico, surpass most of the other monumental remains of prehistoric man. But the men of the neolithic period could do more than build stone monuments and fashion polished stone implements; they understood something of rude mining processes, for they left articles made of bronze and iron.

2. Language

It might appear that tools and implements constitute the most important elements in culture. Certainly they are tangible phases of culture and have been preserved for so many thousands of years that they help us to reconstruct the steps and stages of cultural evolution before the time of written language. And yet Ellwood [7] and Wissler, from very different angles, both agree that the fundamental thing ". . . is a core of ideas and beliefs, actuating a people and in a large measure controlling their career, that

[7] Ellwood, *op. cit.*, ch. 1.

forms the backbone, or at least the unifying element, in their culture-complex."[8] When a mental pattern is embodied in a word or a language symbol it may prove a very effective stimulus to one who hears, but the trace left by an idea or a belief of paleolithic man is hard to find. It may only be inferred from the decorations on his bone tools and from the paintings on the walls of ancient caves and grottos. Consequently our account of the origins and evolution of language must of necessity consist of speculation and theory. Nevertheless we must recognize the tremendous importance of language as both the vehicle and the expression of culture.

Articulate speech is a form of behavior which requires the exercise of a higher degree of intelligence than that possessed by any animal save man. How may we explain the origin and growth of this human intelligence? The origin of the mental faculties and moral nature of mankind is to be explained by the socializing influences of group life.

Throughout the ages before man was differentiated, certain animals lived in groups and were becoming accustomed to the advantages afforded by association. Life in societies is the most powerful weapon in the struggle for existence. Horses, although badly organized on the whole for resisting their enemies and the adverse conditions of climate, would soon have been exterminated were it not for their sociable spirit. The wolf and the bear cannot capture a horse unless the animal becomes detached from the herd. If a beast of prey approaches, several studs unite at once and repulse the beast, sometimes even chasing it. When a snow-storm rages, studs crowd together and the warmth of their several bodies keeps them from freezing. If the group disperses, most of the horses perish and the survivors are found after the storm, half dying from fatigue.[9] The com-

[8] Wissler, C., *Man and Culture*, 1923, p. 3.
[9] Kropotkin, P., *Mutual Aid*, 1904, p. 47.

mon ant thrives without having any of the protective features which animals living in isolated life possess. Its color renders it conspicuous and its sting is not formidable. Yet ants are dreaded by most stronger insects. Their most important source of strength consists of the maintenance of a highly coöperative group life. The animals which know best how to combine have the greatest chance for further evolution, even though they may be inferior to others in each of the characteristics enumerated by Darwin and Wallace, save in intelligence.[10] This last is generally admitted to be the most powerful aid in the struggle for existence. But intelligence is eminently a social attribute. "Language, imitation, and accumulated experience are so many elements of growing intelligence of which the unsociable animal is deprived." For this reason we find at the top of each class of animals those which combine the greatest sociability with the highest development of intelligence. "The fittest are thus the most sociable animals, and sociability appears as the chief factor of evolution, both directly, by securing the well-being of the species while diminishing the waste of energy, and indirectly, by favoring the growth of intelligence."[11]

Thus it was that thousands of years before man appeared, association was preparing the way for human society. Association was a chief cause of the development of intelligence and of the power to coöperate. Moreover, social life developed with a progressive weeding out of unsocial creatures which thereby became a more easy prey to physical forces and living enemies. The teachable disposition acquired by certain animals from their age-long experience of social life made domestication a possibility.

Pre-literate peoples of the present day live in groups, and all the remains of earlier men show that they too lived in groups. There is no reason to believe that the anthropoid

[10] Kropotkin, P., *Mutual Aid*, 1904, p. 47.
[11] Giddings, F. H., *Principles of Sociology*, pp. 204–207.

precursor of man was an unsocial animal. Indeed, the mental differences that mark men off from other creatures are those that are created by social discourse. Speech in particular, an attainment that has given man his preëminence among other animals, is distinctly a social creation. Since association and sociability have been such all-important factors in the mental evolution of mankind we shall consider the advantages that accrue from social life.

Association immediately affects selection and survival. Life in groups affords protection from extremes of climate and from ferocious animal enemies. In the snow-storm, sheep press together and keep warm. Certain animals move in herds and flocks, so that in case of danger they are able to stand off the enemy. The isolated animal, unable to sustain bodily warmth in the face of the blizzard, succumbs. A fierce enemy is more sure to exterminate the single individual. In this way it happens that sociability has a definite survival value, for the individual accustomed to group life is selected to survive, while the individual living an isolated existence lacks the advantage of coöperation and is more often destroyed.

Life in societies insures a larger and a more certain food supply. Social animals hunt in packs, in which their combined strength is often able to vanquish prey that one of them alone could not overcome. Moreover, food secured by one of the pack is often shared with the other members, while an unsocial animal would be driven from the feast.

But the great effect of association and group life upon selection is found in the fact that through the advantages of protection and certain food supply gained by coöperation and mutual aid, the average social animal has a better chance to reach maturity and have offspring. Under the safer conditions of group life, more progeny can reach maturity than is possible in the uncertain state of isolated families.

Association reacted powerfully upon variation, for social

life furnished safety from enemies and permanence of food supply, making possible the birth and nurture of a larger number of offspring, also permitting new variations to arise and to become definite characteristics of the group. Under conditions of comparative security, individuals possessing variations in the direction of tolerance, sympathy, and compassion were likely to be favored with longer life and more numerous progeny than individuals without these traits. More numerous offspring means an increased chance for the appearance of a new germinal variation. With many progeny surviving, it is reasonably certain that some individuals will have innate capacities superior to those generally possessed by the former generation. In this way, association tended to cumulate biological gains.

In group life the gain of one member through imitation became the gain of the group. A new way to perform some old function, greater dexterity attained by one, a surer method for securing food, were gains quickly imitated by other members of the group. In this manner all received benefit from the discovery of one. Participation in the common cause, sharing in the general benefit, operated to modify the more plastic individuals and developed sympathy and toleration. Imitation of those who were of a naturally sympathetic and reasonable disposition tended to repress excessive cruelty and intolerance, and gave that unity and coherence which made coöperation both practicable and successful. In this way the social process cumulated gains, and group experience came to be more ordered and varied.

Group life must have developed far beyond the stage exhibited among apes of contemporary times, before articulate speech could begin, because the studies of Yerkes [12] and others have shown that anthropoid apes possess only emotional cries and not true verbal language. Let us consider, therefore, the probable conditions of group life un-

[12] *Chimpanzee Intelligence and Its Vocal Expressions*, and *Almost Human*.

der which early man, with an intelligence already superior to any living form of ape, developed language. It will be convenient to consider the evolution of verbal language in accordance with the following stages of development, suggested by Allport's psychological analysis.[13]

I. The pre-literate stage (no writing, only spoken language)
   1. The pre-linguistic, laryngeal, or glottal stage (the "half-way" stage of communication)
   2. Random articulation stage involving the fixation of circular ear-vocal reflexes
   3. True articulate speech in which syllable responses become conditioned to sight of an object

II. The literate stages (written language in addition to spoken language)
   1. The pictographic stage—picture writing—pictures of things used as symbols of ideas
   2. Mixed phonetic or rebus stage in which the pictograph stands for both an object and a sound
   3. True alphabet, purely phonetic characters, in which characters stand for sounds

We do not know when spoken language or true articulate speech began, but it probably preceded picture writing, and the first pictographs are at least as old as the Magdalenian culture level, not more recent than fourteen to twenty thousand years ago. A very long period would be required for the development of true articulate speech from its crude beginnings in random articulation and laryngeal expression, so that we may consider the Mousterian culture period, when the Neanderthal race roamed over Western Europe, as probably the earliest culture stage to which language may be assigned.

The prelinguistic or "half-way" stage of communication must have persisted for hundreds of thousands of years, because we find it still the method of communication used by living apes. Differences in tone, pitch, and quality

[13] See Allport, F. H., *Social Psychology*, 1924, ch. viii, for a suggestive summary of opinions on the origins of language.

of emotional cry may have become associated with situations of danger, desire for food or water, sex play, and many another life need or situation. In general, however, it seems certain that laryngeal cries of this sort are at first merely a "half-way" stage of communication, since they have meaning and are responded to only by those who hear them. The individual who makes the ejaculation does so without intention or design, except in sex play. He does not use the sound to control the behavior of others; it is merely part of his total visceral and somatic response to the situation. But his companions distinguish the different meanings of cries of anger, surprise, and play, and learn to adapt themselves to such cries. In time these laryngeal sounds, although still of an inarticulate sort, come to have meaning to the individual who utters them in social situations, that is to say, he learns to control the behavior of companions towards himself, by means of the sounds which he makes.

Supplementary to this laryngeal stage of communication by sounds, gesture and facial expression undoubtedly play an important rôle as facilitating visual stimuli. Emotional gestures such as clenching the fist and stamping the foot in anger are quite generally understood. But communication by emotional gesture is likely to have more significance for the one who observes it than for the one who makes it. Communication is still, therefore, in the "half-way" stage.[14] Such demonstrative gestures as pointing, do, however, represent a fuller quality of communication and facilitate control of another's behavior. Graphic gesture used in mimicry extends beyond the limitations of demonstrative gesture, for objects not within sight may be called to mind by graphic gesticulation. Experimental psychology has thrown considerable doubt upon the accuracy with which persons interpret the social meaning of the facial expres-

[14] Allport, *Social Psychology*, pp. 190–191; and Romanes, G. J., *Mental Evolution in Man*, ch. 6.

sions of others, consequently we cannot assume an exclusively important rôle for facial expression as meaningful gesture.[15]

Allport has well summarized the limitations of prelinguistic communication.[16] In the first place, abstract meanings cannot be conveyed. It is impossible by gesture, facial expression or ejaculatory sounds to distinguish between "a man," "the man," and "men." In the second place, and as a corollary of the first limitation, communication is concrete and confined to a succession of images lying close to the level of immediate sensory experience. Finally, syntax cannot be developed since such abstract meanings as tense and mood find no vehicle of expression in variations of pitch and tone or in accompanying gestures.

The true function of language is the symbolization of objects and abstract concepts, and, as we have seen, this function can never be supplied by laryngeal communication. If we assume that early man possessed a rudimentary articulating mechanism, an assumption consistent with our knowledge of human anatomy and physiology, then it follows that he was capable of producing random articulated syllables long before true language developed. There is social evidence for this assumption also in the extensive reduplication of syllables in pre-literate vocabularies.

The stage of random articulation probably began long before laryngeal sounds gave first place to articulate speech as the chief means of communication. In other words, it should be noted that the various stages in the development of language overlap. There are no sharp breaks between stages. At the beginning, it seems likely that random articulation of sounds had little specific meaning and merely served the function of the intercommunication of a general sense of bodily well-being and gratification. Per-

[15] Allport, *Social Psychology*, ch. ix.
[16] *Ibid.*, pp. 191–193.

haps gregarious habits, established in times of protracted association in caves or rock shelters during the period of inclement weather when Neanderthal man lived, set the social situation in which sociability was manifested by this "chatter" response. Random articulation of syllable sounds would by practice become fixated in circular reflexes of an ear-vocal sort. The next step would be that in which the ear-vocal response could be evoked by hearing the same

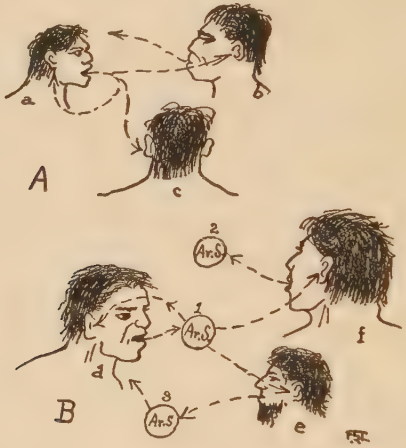


FIGURE 8

Development of Language. A represents the laryngeal or "half-way" stage in which the sounds made by *a* have more meaning to *b* and *c* than to himself. B represents the stage of random articulation. Random articulation of syllable sounds as 1-Ar. S. become by practice fixated in circular reflexes of an ear-vocal sort by individual *d*. The next step comes when the ear-vocal responses 2-Ar. S. and 3-Ar. S. are evoked from individuals *e* and *f* upon hearing the same sounds (1-Ar. S.) uttered by another individual (*d*).

sounds uttered by another. Figures 8 and 9 explain graphically the probable sequence of development.

Thus far, our theoretical explanation follows Allport's analysis and it is not difficult to see how the laryngeal and articulate stages developed in functional sequence, but the third stage of language development is more difficult to explain. Here we are faced with the problem of showing

how syllable responses, originating in random articulation, became conditioned to the sight of an object, so that the sound became associated by those present with the object or situation. "Here then we have the basis for the use of the same word-sign or name by two or more persons, the essence, in other words, of language itself. Success in communicating with and controlling one's fellows with reference to the object would serve to fixate this conditioned ear-vocal reflex as a permanent habit." [17]

The condition probably essential for associating the sound with the object and fixating the ear-vocal reflex as a permanent habit of communication was a social situation of intense excitement. We know that synaptic resistance is lowered by general nervous excitement and that response may be augmented and facilitated by an accompanying stimulus. Situations of this highly stimulating sort occur in times of festival where bodily play excitement is marked. Donovan [18] long ago pointed out, and Giddings agreed [19] that in primitive festivals bodily play movement in imitation of the actions of animals or men, accompanied by rhythmic beating, some approach to song, and communal interest in self-display, were social phenomena associated with the origin of articulate speech. It seems likely that, under the mental exaltation and nervous excitement of such situations, synaptic resistance would be lowered sufficiently to admit of the integration of a new coördination between the random articulated sound and the visual image of an object which was for the time being the center of group attention. Once hit upon at random, but facilitated by repetition and the accompaniment of such exciting stimuli as would occur in the celebration of a victory, the capture of an animal of chase, the stranding of a whale, or the

[17] Allport, *Social Psychology*, p. 195.

[18] "The Festal Origin of Human Speech," *Mind*, Vol. xvi, 1891, no. 64, p. 500 ff.

[19] *Principles of Sociology*, p. 225.

coming of the salmon, ear-vocal reflexes would be fixated in speaker and hearers and conditioned to a specific visual image. Thereafter the sound uttered (although the object was not present) would call to the mind of a hearer the image of the object, and similarly the image occurring in the mind of one individual would arouse the associated articulate element and he would utter the sound, which would forthwith call up in his hearers the same image. Thus the word or the name became the substitute for action. It symbolized objects not present to sense perception, and ideas of relationships.

Once articulate speech was developed it became the dominant behavior pattern of the human species. Speech, or symbolic thinking, gave "insight in terms of generalization of experience, foresight of possible future consequences of action, the fabrication of consciously directed purposes, deliberative choice in view of these purposes, and finally the development of ideals of character and the shaping of daily conduct with a view to moulding the personality in conformity with these ideals."[20] Language became the chief vehicle for the transmission and preservation of culture, as well as the most characteristic aspect of culture. Long before written language was invented, oral tradition preserved and handed down from generation to generation the discoveries, the inventions, and the social heritage of the past. Language provided man with a boon beyond price, the means of storing, externally to any particular nervous system, records of experience having social values to the group. External storage of individual experience in language symbols is a process entirely unknown to any form of life other than man. The importance of this process seems beyond calculation. It reaches its highest development in the alphabet.

Some of the uncertainties connected with the origins and development of oral or verbal language are not present

[20] Herrick, *The Brains of Rats and Men*, pp. 350–351.

when it comes to the study of written language. Here we have tangible evidences in the form of marks, signs, and imprints, preserved on the surfaces of bone and rock, making it possible to assign approximate chronology. We have

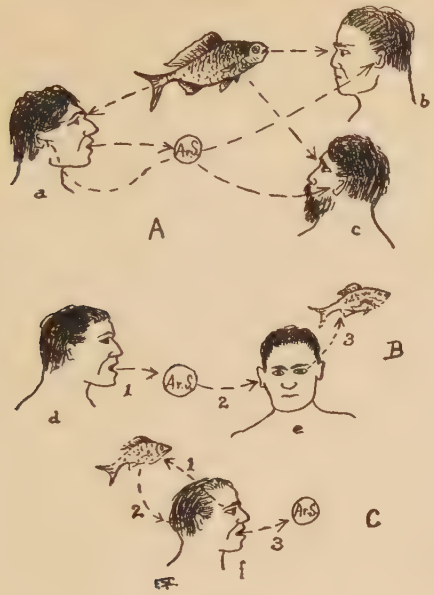


FIGURE 9

Development of Articulate Speech. The syllable response Ar. S., originating in random articulation, becomes conditioned to the visual stimulus of the *object fish*, since uttered at a time of intense nervous excitement when the attention of *a*, *b*, *c*, and others present is centered on the object fish. Thus in A, ear-vocal reflexes are fixated in speaker and hearers and conditioned to the specific visual image. Thereafter in stage B, the sound uttered (Ar. S.) by *d* calls up to the mind of a hearer *e* the visual image of a fish 3. Finally in stage C, the visual image of the fish 1 stimulates the individual *f* and the articulate response Ar. S. (3) follows. Thus the word becomes the substitute for action and symbolizes objects not present to sense perception.

already indicated the belief that the earliest stage of writing, the first of the literate stages in the development of language, began with pictographs probably made in the Magdalenian culture period some fourteen to twenty thou-

sand years ago.[21] Pietté believed that the Magdalenian symbols were figures or images employed as signs of objects, and consequently representative of words. He distinguished two successive systems of writing, the hieroglyphic and cursive. Many peoples developed simple pictographs; very few ever passed beyond to the stage of transitional writing (rebus).[22] Possibly the following six devised their own rebus systems independently: the Egyptians, Sumerians, Chinese, Hittites, Cretans, and Mayas. We have noted the limitations of pre-articulate stages of language, and here again we find much the same sort of defect in the first stage of writing. Pictographs can not express abstract ideas of form or relationship. It is not possible to express by a picture system the difference between "a man," "the man," and "men." Pronouns, prepositions, prefixes, suffixes, grammatical endings, articles, and the like, cannot be represented.

The second or rebus stage of written language development represents an important invention and embodies the principle that pictures may be interpreted either directly as pictures of specific objects, or as names (to represent sounds). In Figure 10 the picture of a human eye may represent the eye, or it may represent a sound such as "I," which has a very different meaning. This stage is obviously an intermediate and transitional one, for pictures continue to be used alongside of symbols of sounds. Pictures become abbreviated to represent sounds and thus conventional symbols develop. This stage of writing (ideograms) is represented by the Egyptian hieroglyphs of 4777 B. C., by the Sumerian cuneiform of 4500 B. C., and by Chinese characters. Since pictures did not go out of use but continued alongside of symbols of sounds, the system was confusing, and meaning had to be inferred from the context. The Egyptians used this cumbersome mixed system

[21] MacCurdy, *op. cit.*, Vol. 1, p. 286.
[22] Kroeber, *op. cit.*, pp. 262–265.

for a thousand years after they were in contact with the simple, brief and accurate alphabet used by Phœnicians, Hebrews, Greeks, and Romans.

Written language attains its highest stage of development with the invention of the phonetic alphabet. Now sym-

FIGURE 10

The Development of Writing. Magdalenian pictographs (human grotesques after Obermaier). Aztec, Chinese, Cuneiform and Egyptian hieroglyphs. Egyptian pictograph for fish with articulate syllable "Xa." Individual *b* sees the figure for fish drawn on the surface of a rock, and utters the syllable "Xa," which overheard by *c* (who has not seen the picture) summons to his mind the visual image of a fish 3.

bols become the signs for sounds, words, syllables or elemental letter sounds, instead of denoting objects of ideas. About 1000 B. C. a Semitic people (probably the Phœnicians) began to use a set of twenty-two non-pictorial characters. This phonetic alphabet spread from the original center and appears to have been the basis of the Phœnician and the Sabæan alphabets.[23] It appears that early writing was surrounded by mystery and sacredness in the minds of the

[23] For a non-technical account, see Hackh, I. W. D., "The History of the Alphabet," *Scientific Monthly*, August, 1927, pp. 97–119.

masses and that written symbols were endowed with spiritual significance, as if the characters written upon a smooth surface could "talk" through the mouths of priests and scribes. Another indication of the close association still maintained between the written symbol and the articulated syllable is the habit we have, when puzzled by writing which we can not decipher, of asking, "What does it say?" whereas the correct phrasing of the question would be, "What does it read?"

Once written language had attained the alphabetic stage, it became possible to preserve by external storage the mental patterns of ideas of relationship in the physical and social fields. Permanency of record to a degree before unthought of became possible. The vehicle of written language reacted powerfully upon the form and function of social relationships. Group life could now rest upon accurately recorded and effectively transmitted traditions. Social institutions could become more ordered and varied. Let us be more definite and consider how language, especially written language, influenced the growth of social institutions.

3. Social Institutions

Man is not only a tool-making animal; he is an institution-making animal. Of the three phases of culture which we have selected for analysis, social institutions remain. There have been many definitions of institutions and in a general way we know what we mean when we use the word. Some students have found it important to distinguish between the function of an institution and its structure. Allport [24] has attempted an analysis of political institutions and comes to the conclusion that ". . . social structure—from the psychological stand-point, is reducible to common

[24] "Notes on Political Definition and Method," *American Political Science Review*, vol. xxi, no. 3, August, 1927, pp. 611–618.

and reciprocating attitudes of individuals and variations in such attitudes as to both content and degree of generality.'' Thus the structure of a social institution is reduced to a form of behavior. It is obvious, of course, that social institutions are significant as they influence or express human behavior, but the social institution is also a culture complex, and this unity of characteristic human behavior and associated culture complex is sufficiently definite so that we recognize such different institutions as the family, the state, religion, industry, and a host of lesser forms.

In order to give body to the idea or concept of the social institution, let us consider in order some of its characteristics.

First, a social institution arises out of and as a result of repeated groupings of interacting human individuals in response to elemental needs or drives (sex, hunger, and fear).

Second, common reciprocating attitudes and conventionalized behavior patterns develop out of the process of interaction (affection, loyalty, coöperation, domination, and subordination).

Third, cultural objects (traits) that embody symbolic values in material substances are invented or fabricated and become the cue stimuli to behavior conditioned to them (the idol, cross, ring, and flag are charged with emotional and sentimental meaning).

Fourth, cultural objects (traits) that embody utilitarian values in material substances are invented or fabricated and become the means of satisfying creature wants for warmth, shelter, etc. (buildings, and furniture).[25]

Fifth, preserved in oral or written language, externally stored and handed down from one generation to the next, there is description and specification of the patterns of

[25] It is evident from the preceding discussion, that back of these culture traits fabricated out of material substances, there is always the mental pattern of its form and function. This pattern is externally stored and transmitted in language symbols.

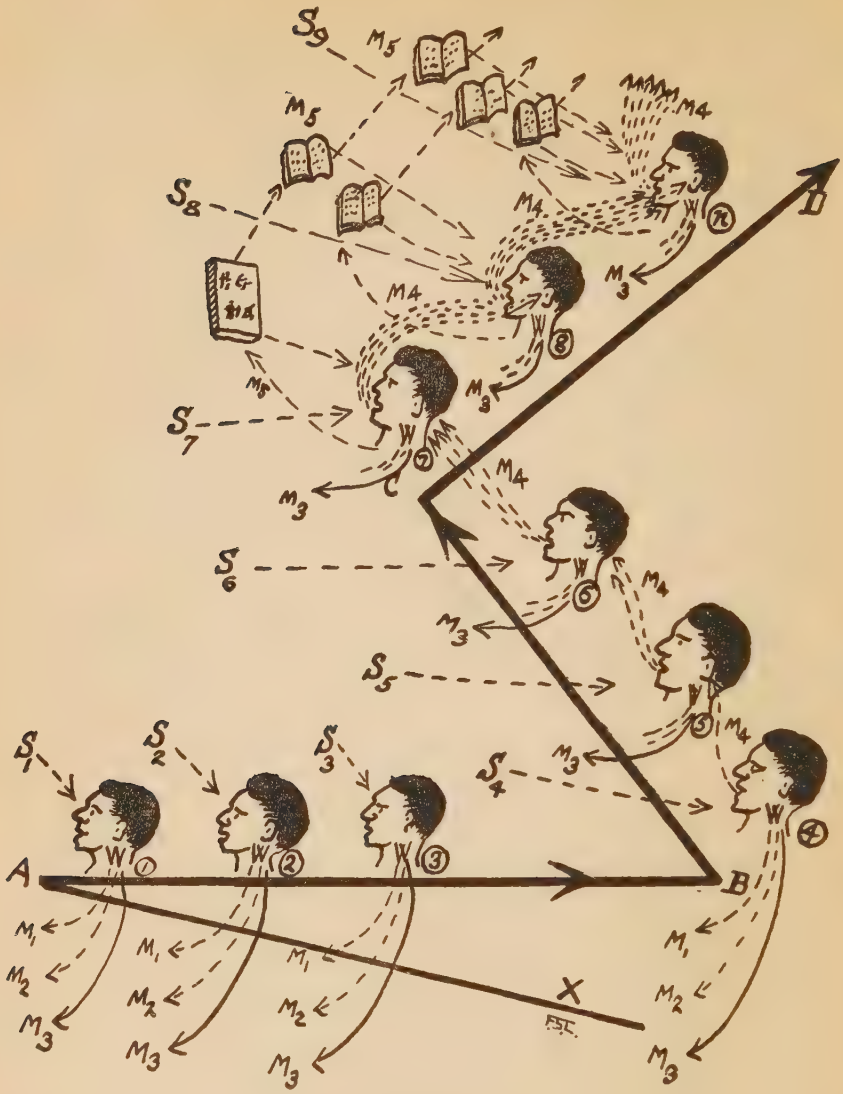


FIGURE 11

Development of Tradition

AB represents the line of evolution in the pre-linguistic stage of culture. Here generations 1, 2, etc., meet the recurring life situations (stimuli S_1 S_2, etc.) by trial and error movements M_1 and M_2, and finally, each for himself alone works out M_3, as the successful movement. There is no transmission except when the successful response M_3 is seen by a person who is present and afterward copied. Inasmuch as there is yet no language, it is not possible to describe to another person any past event.

BC represents the line of cultural evolution in linguistic culture. Here generations 4, 5, etc., meet the recurring life situations (stimuli S_4 S_5, etc.) by at once responding with the successful movement M_3, because this successful response has been described to them beforehand in the speech of their elders (M_4), which has served as a medium for the external storage of human experience. The speech reactions M_4 become more numerous as oral tradition grows and we pass from generation 4 to 5 to 6, etc. Thus the wasteful trial and error process of M_1 and M_2 may be eliminated (and hence does not appear in the figure) because of the external storage of experience in language symbols.

CD represents the line of cultural evolution in literate culture. Here the experiences of earlier generations are externally stored and recorded not only in verbal language, but also in writing (reaction M_5). It will be observed that both the volume of M_4 (oral tradition) and of M_5 (written tradition, books, etc.) increases from generation 7 to 8, etc. Thus does the social heritage grow, accumulate and elaborate. The fact that generations 7, 8, etc., live a life filled with richer stimuli is also shown by the figure. Behavior of individuals in generations 7, 8, etc., becomes conditioned to both oral and written language stimuli.

The angle made by AB with the horizontal is less than the angle made by BC, which in turn is less than that made by CD, thus indicating roughly that the rate of accumulation of culture is greater after language has been invented and developed than before, and greater still after writing has been invented.

interrelationship among these elemental drives, attitudes, symbolic culture traits, and utilitarian culture traits.

These five traits just enumerated are all capable of objective treatment and some have been quantitatively measured (the attitudes).[26] They appear in combination and are always interdependent in a functional sense. Taking the family as an illustration of the institutional complex, it may be conceived in the words of Burgess [27] "as a unity of interacting persons"; and by this he means that the unity of interacting personalities is a living, changing, growing thing. But this dynamic aspect of the institutional complex does not deprive it of the attribute of structure, a term which ". . . may properly be applied to the fabric of relations and prescribed positions with which societal functions are permanently connected." [28] We are now prepared to consider the structural aspect of social institutions, since this phase of the phenomena possesses great cultural significance.

We may say that the structure of a social institution consists in the combination of certain related type parts into a configuration possessing the properties of relative rigidity and relative persistence of form, and tending to function as a unit on a field of contemporary culture. This definition is consistent with those of Burgess and Sumner just quoted. It differs from these in that it attempts to specify the varied attributes of the complex whole. Let us explain precisely what is meant by "type parts."

Four main type parts which combine to produce the configuration or cultural concretion known as the social institution are:

First, common reciprocating attitudes of individuals and their conventionalized behavior patterns.

[26] Young, K., "Measurement of Personal and Social Traits," *Publications of the American Sociological Society*, vol. xxi, 1927, pp. 92–105.

[27] In *The Family*, vol. vii, 1926, pp. 3–9.

[28] Sumner, W. G., *Folkways*, p. 35.

Second, cultural objects of symbolic value; that is, objects charged with emotional and sentimental meaning to which human behavior has been conditioned.

Third, cultural objects possessing utilitarian value; that is, material objects that satisfy creature wants.

Fourth, oral or written language symbols which preserve the descriptions and specifications of the patterns of interrelationship among attitudes, symbolic culture traits, and utilitarian culture traits.

The significance of these elements of the institutional complex will be made clear when we apply them as criteria to analyze the institutions of the family, the state, religion and industry. In every case the principle will be more convincing if a particular family, a specific religious denomination, some localized state unit, or a definite industrial enterprise is kept in mind. The following table offers an analysis of four great human institutions in terms of the four "type parts" which we have defined above.

TABLE I

SOCIAL INSTITUTIONS

Type parts of Structure	*Family*	*State*	*Religion*	*Industry*
I. Attitudes and Behavior Patterns	Love Affection Devotion Loyalty Parental respect	Devotion Loyalty Respect Domination Subordination Fear	Reverence Awe Fear Loyalty Devotion Subordination	Fair play Loyalty Coöperation Conflict Workmanship Thrift
II. Symbolic Culture Traits	Marriage-ring Crest Coat-of-arms Heirloom	Flag Seal Emblem National anthem Army—Navy	Cross Ikon Idol Shrine Hymn Altar	Trade mark Patent sign Advertising emblem
III. Utilitarian Culture Traits	Home equipment Personal property	Public buildings Public works Warlike equipment	Church buildings Cathedral Temple Sanctuary Altar	Stores, Shops Factories Ships Railroads Machinery
IV. Oral or Written Specifications	Will Marriage license Genealogy Mores	Treaties Constitution Charter Laws Ordinances Mores	Creed Doctrine Hymn Bible Sacred book	Franchise Licenses Contracts Partnership papers Articles of incorporation

The list of examples of each type part is, of course, not complete, since only enough examples are given to clinch the point to be illustrated. Moreover, the categories overlap and one example may appear in two or more classes. Thus the hymn may set forth in writing certain desired attitudes and behavior patterns, but it has also high symbolic value. The "army" has symbolic value and also includes utilitarian culture traits (such as ordnance) used in warfare. Inherited personal property is used in the home, but, regarded as an heirloom, it has great sentimental value involving family pride and devotion. This analysis helps us understand the justification for speaking of "old families" in contrast to the average and less colorful biological group. The essence of the old family is the continuity of its tradition and cultural possessions. Obviously the germ-plasm of the old family is no more ancient than that of the unknown or nameless family. But in the case of the old family we find that certain attitudes have become traditional, a certain crest has become symbolic and an emblem of success, certain articles of household furniture or real property have been passed down almost intact for generations, and the family history is a matter of public knowledge either in oral tradition or written records. These remarks in interpretation of the social phenomena described in the table, serve to illustrate the functional interdependence of the various type parts of institutional structure and emphasize the unity of the institutional complex.

4. Summary: The Accumulation of Culture

At the beginning of this chapter we set out to limit our treatment of culture to a description of three of its phases: tools and implements, language, and institutions. In the preceding pages we have attempted to trace the development or to define each of the three forms. Let us now attempt to pull together the varied manifestations of culture

to ascertain what unity there is, if any, in this process of cultural change. Figure 12 shows in a rough sort of a way the approximate chronology of different phases of development. It shows how culture elaborates, accumulates, piles

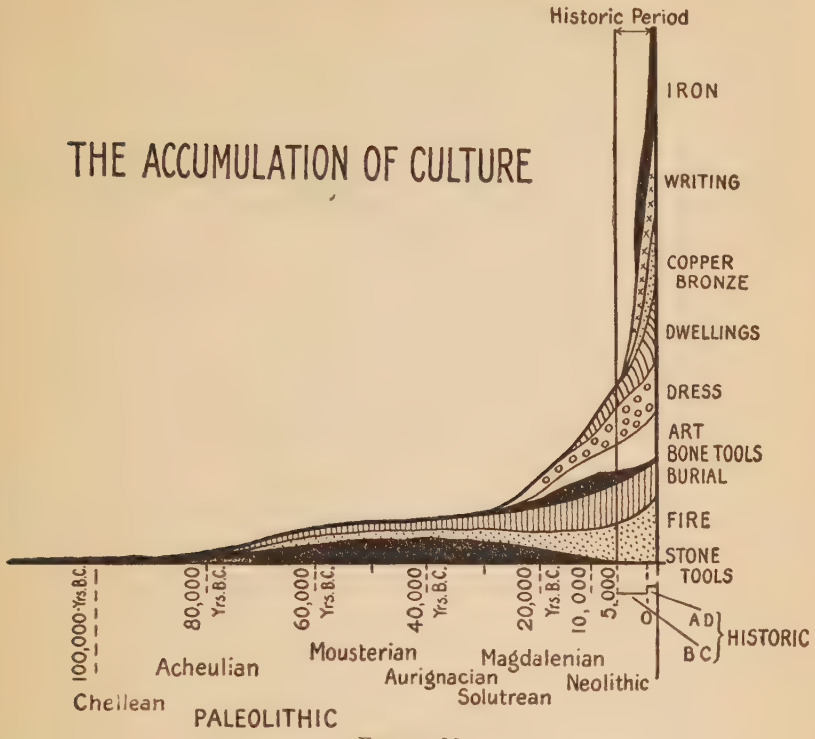


FIGURE 12

The Accumulation of Culture. Here the growth of such culture traits as stone tools, use of fire, burial customs, bone tools, art, dress, dwellings, copper and bronze, writing and iron, is shown. The approximate chronology is indicated on the horizontal. Art and dress go back to the Magdalenian period at least, and are probably 25,000 or more years old. The use of stone and bone tools has gone through a cycle and now declines. The other culture traits have grown and particlarly since the advent of writing and the use of iron, has cultural growth shot up.

up, at what appears to be an ever-accelerating rate. Stone implements increase in number and variety. Bone tools are added. Metals become utilized. The stream thickens. Gradually bone and metal replace stone, which in these later

times is used only for building purposes. Language becomes articulate. Theological, philosophical, scientific and technical vocabularies elaborate and enlarge. The original human institution of the family continues, but its early functions and prerogatives are split off. These grow and elaborate into separate institutions of the state, industry, the church, education, business and a host of others. And always, woven in and out, back and forth, throughout the whole growing fabric of culture traits, there is the sinuous thread of written language, externally stored mental patterns and ideas, reinforcing, strengthening, stiffening, and yet flexing the stream of culture.

PART II

HISTORY REPEATS ITSELF

CHAPTER III

CULTURE AND RECORDED HISTORY

THE process of cultural accumulation began long before the time of recorded history and the story of early man may be inferred from the stages of development shown in stone tools and implements. But these sources of our knowledge of cultural change are at best fragmentary and inaccurate; about all that they tell us is that culture accumulates in a continuing whole. Anthropologists and historians emphasize the continuity of man's history and admit of no break in the stream. This is an important point, since it permits us to learn from a study of recorded history the main principles of cultural change that probably have general applicability in the interpretation of the culture of different periods and different areas. In view of this principle we shall find it advantageous to confine our further treatment of cultural change to a study of certain phases of the history of such definite culture groups as Greece, Rome, Medieval England, and contemporary Western Civilization. Such a limitation of the field confines our analysis to an interpretation of the cultural significance of the facts of written or recorded history and greatly simplifies our problem and makes it quite definite.

The invention of written language provided man with a vehicle for the accurate transmission of his social heritage. Written (recorded) history, therefore, provides us with data of social and cultural traits affording opportunity for wide comparison and intensive criticism. Indeed, before the day of written language the critical examination of the social heritage was difficult in the extreme.

Glancing back over the record of social history, one is impressed by the similarities as well as with the bold contrasts presented by the productive systems of different ages. Equally striking is the repetition of ancient errors in the practice of charity and the inevitable social reverberation of their consequences. History is said to repeat itself. But differences in natural resources, climate, racial experience and national psychology cause history to repeat itself only inexactly.

During the period of Greek ascendency and while Roman power lasted, we find that agrarian decline was associated with essentially similar conditions: the consolidation of small, peasant holdings into great estates, owned by capitalists and cultivated by slave labor. In Greece, slavery never developed into the highly organized industrial system that it became in Rome, but in both periods wasteful slave labor did much to exploit the primitive fertility of the soil. In both periods, too, cereal production declined because the large slave-cultivated estates were devoted to pasturage or to the raising of luxuries. As a consequence, the food supply of the metropolis became a serious problem. Again, in both periods the inevitable competition of yeomen farmers with slaves demoralized the free, rural population, and helped bring about an exodus from the country to the city. Finally, in both periods the city populace, debased by the existing practices of public support for citizens, lost the habit of self-maintenance and degenerated into an irresponsible rabble.

The study of English economic history reveals agrarian tendencies in some respects similar to those of antiquity. Enclosure of small yeomen holdings into large capitalistic-owned estates proceeded during the fifteenth and sixteenth centuries, and was accompanied by much misery among the people. Again, in the eighteenth and nineteenth centuries, we observe a marked centralization of agricultural holding. This process, so disastrous for ancient nations, has been

attended in modern times by such a remarkable expansion of manufacturing activity that the labor displaced from the soil has been rapidly absorbed, and the collapse of national economy averted.

Slavery, a basic industrial force in Greek and Roman times, hindered the development of manufacturing industry and stifled free competition by its degraded economic standards and its wasteful methods. There was consequently a tendency in antiquity, culminating in the Roman Empire, for national consumption to exceed production. Modern nations have evaded this evil by transforming raw materials of low intrinsic value into articles of great intrinsic worth through manufacturing processes. The peoples of Greece and Rome never developed any large-scale system of manufacture like that of the great industrial nations of to-day, because slavery was a constant obstacle.

Manufacturing industry became a significant, economic activity during the later middle ages when free artisans organized the craft gilds. But not until the coming of the machine and non-human motive power in modern times, did manufacturing industry attain a scale of organization commensurate with the vast commercial and agricultural activities of mankind. Indeed, the social economy of modern nations differs fundamentally from that of ancient nations in that modern social organization reflects everywhere the influence of the machine. Agriculture, manufacturing industry, and communication have been revolutionized, one after another, by the introduction of mechanical devices and machine power. These revolutions have been thoroughgoing and far-reaching. No intelligent understanding of modern social economy, in contrast to previous economic organization, is possible without a knowledge of these three great social revolutions of modern times. Their true significance once understood, however, it is possible to form an intelligent opinion upon problems of the contemporary social order.

These fundamental differences between methods of production in ancient, medieval, and modern times have their counterpart in the different methods of relieving poverty, and in essentially different attitudes towards poverty. Considering the limited knowledge and the primitive methods of the time, the poverty of Greece and Rome seems irreparable. This poverty was interwoven with the very texture of industrial life. With the institution of slavery economically necessary and morally justified, with the social ideal of a leisured life free from manual toil, it was hardly possible to develop the modern ideal of economic independence for every one through personal and productive labor. Consequently, dependence involved no stigma; if it was not actually praiseworthy, it was at least quite regular, and no one thought of alleviating or preventing poverty by constructive rehabilitative methods.

In contrast to this rather hopeless condition of affairs, we believe that the poverty of to-day is a by-product of our industrial system, and not a necessary element in it. We do not believe with the ancients that "The poor you have always with you." By far the larger part of the poverty of the present is a product of social maladjustment, an incident in an industrial awakening and a manufacturing growth that has been more rapid than has been the adaptation in methods of distributing wealth and sharing the costs of progress. A passing of the emphasis from the ancient alleviative to modern preventive and constructive methods of dealing with poverty exemplifies a fundamental reversal in point of view.

CHAPTER IV

THE CIVILIZATION OF GREECE: A STUDY IN CULTURAL CHANGE

HELLENIC civilization was characterized by certain culture complexes which were influenced by the fundamental geographic and physical resources of the region. Of these land was one of the most important factors.

1. The Land and the People

Greece is located at the threshold of the Orient, readily accessible from Asia Minor and Egypt. Because of this focal location in the ancient world, Greece became the intellectual clearing-house for the eastern Mediterranean. The general information gathered here afforded material for wide comparison, and established conditions under which cultural growth became ordered and varied. It was a frontier region of the ancient world, where marauders, outlaws, refugees, and enterprising men from all peoples had mingled for hundreds of years, producing a hardy and fearless stock.

The shore formation is irregular and broken into many sheltered harbors and natural hiding places. Indeed, Greece is said to have the longest shore-line of any area of its size in the world. Four hundred and eighty-three islands extend in an unbroken series to the shore of Asia Minor. In early times these "stepping stones" to the East admitted the bold native inhabitants to wider maritime enterprise. On the east, the coast of Asia Minor bordering the Ægean abounds in small, fertile plains, and is as well supplied with harbors as is the opposite shore of Greece. Thus the Ægean

does not separate the two coasts, but unites them in such a fashion that the smallest vessels may pass across without losing sight of land.

The sense of security suggested by this advantageous shore formation is supplemented by the mild scenery of the mainland. The mountains are not lofty enough to be awe-inspiring, but are suggestive and appealing in their beauty. In general, the aspects of nature are on a small scale, comprehensible, on the measure of man himself.

Zimmern says: "The Mediterranean landscape, like the institutions of the city-state, forms a permanent background to Greek life and thought. Its influence is omnipresent, but it is seldom expressed. It is left to show itself, more spontaneously and truthfully, in the chance idiom or detail that slips out as the setting of a story; in what is implied or hinted, rather than consciously stated; in the many little significant touches which, to the careful observer of nations as of men, are always the surest and happiest revelation of character."[1]

From Thrace to the southern part of the Peloponnesus, the short valleys opening out to the east contain small streams, usually dry in summer. Winter converts them into roaring torrents. The entire country is so diminutive that, from almost any point inland, it is but one day's travel to the sea. The greatest length of the peninsula is about 250 miles; its greatest breadth is about 180 miles; its area is about equal to the state of Maine. Short valleys, with their small streams and little, alluvial plains at the mouth, are separated from one another by rough, mountain masses, strewn with immense boulders. The broken relief of the country discourages travel from one valley to another and interferes with intercourse between neighboring valley communities. Thus, natural conditions isolated the primitive inhabitants from their neighbors, and favored the growth of small city-states in the separated valley communities. In

[1] Zimmern, A. E., *The Greek Commonwealth*, Oxford, 1911, p. 16.

these diminutive local groups, the people were so near to their leaders that no single chief could, for any length of time, attain the dominating power of an oppressive tyrant, and so natural conditions favored the growth of a democratic spirit. The relief of the country made the early inhabitants mountaineers. Scant living could be made for a small family group by the varied occupations of hunting, keeping stock, and small-scale tillage. The slightly remote valleys gave natural protective barriers, so that governmental protection was not essential.

Food resources. Although Greece lies in a border region between the semi-tropical and the temperate climates, its soil is not fertile. In general, the surface of the Greek peninsula may be divided into four divisions: the unproductive area, the forest area, the pasture area, and the cultivable area. At the present time, the unproductive area includes about one third of the entire country. This area consists mainly of bare rocks and eroded sections. Since the soil was so scanty, any considerable devastation, such as resulted, for example, during the Peloponnesian War, was a most serious catastrophe, and recovery was difficult if not impossible.[2]

In early times the area of Greece under forest cover was much larger than at present. But for hundreds of years the trees have been destroyed wastefully, so that at this time in eastern Greece few forests remain, although the northwestern section is still well wooded. In the vicinity of Athens, the forest furnished fuel but not timber for naval stores. Since the soil of Greece was incapable of producing a great forest, the early inhabitants of the country had to go outside in search of large lumber for their ships. As a matter of fact, the so-called forests of Greece really consist of bushes, and not of tall, standing timber.

The pasture land of Greece is that area which is too

2 Zimmern, *The Greek Commonwealth*, pp. 40, 42.

poor to be sown or cultivated. It forms the borderland on mountain slopes, below the forest belt. There are few cows because the land is so poor, but sheep and goats find sustenance where cattle cannot exist. The animals are lean and thin because they have to climb high and far in search of food. In antiquity Greece was a land of goats' milk and honey. The honey was an important staple food. It was not necessarily a luxury, but was used for all sorts of purposes for which we use sugar.

Except for the forest belt, the land which admits of cultivation is the smallest in area of the four divisions of the country. This cultivable land is found in plains and levels, flanked by rough mountain masses. These plains, watered by streams from the slopes of mountains, comprise the arable land of Greece. They form small compartments, readily protected against a hostile foe.[3] Some plains are shut in by mountains, like the plain of Sparta; others end in the sea. Greek rivers are brown and muddy from the sediment which they carry and build up deltas of silt at their mouths. Since the Mediterranean is a tideless sea, this rich, alluvial soil is never washed away, and favors agricultural industry. These natural conditions, which directly protected the small, fertile areas by rough mountains, indirectly favored the development of Greek institutions and Greek patriotism.

The products of the soil were grain, wine, and oil. Wheat or barley formed the staple food. The Greeks prepared their flour in many different ways, making wheat-bread and unbaked barley cakes. They ate two meals a day and seldom partook of meat, except at festive occasions. The grain was sown in October and harvested in May and June. Each little bit of fertile land was sown, for every Greek city tried to grow its own grain.[4]

Wine was the national drink from the earliest times.

[2] Zimmern, *The Greek Commonwealth*, p. 45.
[4] *Ibid.*, p. 46.

But, since the Greeks drank wine usually in proportions of three parts water to two of wine, they were not a hard-drinking people. Olive oil was an important product. It was used to make butter and soap, and served as fuel for lamps. The olives were squeezed in presses several times. From the first squeezing, the eating oil was obtained; from the second, the anointing oil; from the third, the illuminating oil; the remainder was used as fuel. Since the olive groves were orchards which allowed forty feet between the trees and sixty feet between the rows, there was plenty of room to plant corn under the trees. The olive tree was not a difficult plant to cultivate, for, as Virgil tells us, all it needs is a little digging around the roots. The harvest began in the late autumn, and the olives were picked with considerable care. An important factor in olive growing was the long period which elapsed before the trees reached maturity. It was sixteen or eighteen years before they bore a full crop, and from forty to sixty years before they reached their prime. Consequently, devastation of the olive country meant not merely the destruction of a year's income, but the destruction of a considerable amount of capital as well.

The ancient Greeks considered agriculture the most desirable form of livelihood. From primitive times down to the fifth century, the population had to live off the land. Among the early Greeks, since there was no trade or commerce, the chief means of support was agriculture. The Greek writers, Xenephon, Plato, and Aristotle, all eulogize the life of the farmer. Being by tradition shepherds and farmers, the Greek middle-classes were conservative. They did not live with a view to becoming rich, and did not consider whether prices were high or not. The object of life was to provide the necessities for household needs and to serve as a responsible citizen in the home community. When a Greek citizen owned a large amount of land, the community often clamored for a redistribution of land. In the

time of Pericles, it is probable that one third of the grain consumed in Attica was grown on local farms. The great majority of the landholdings were cultivated by free peasants. They and their whole households worked upon the land, their sons receiving shares of the estate upon the death of the father. In 403 B. C., a proposition was made in Athens which would limit citizenship to the owners of lands or houses. Although Athens was the chief commercial city, there were only five thousand citizens who would have been excluded by this law—an indication of the prevalence of landholding among the middle-classes.[5]

War and colonization. As population increased, the scanty soil of Greece became inadequate for support. About the eighth and seventh centuries B. C., the point had been reached at which the law of diminishing returns in agriculture began to operate.

Whenever there was crop failure or lack of rainfall, the state was face to face with famine. When population presses upon the means of subsistence, there are but two immediate alternatives: to limit population or to increase food. The state must emigrate excess population, or import food. Thucydides has accepted the principle that overpopulated communities must go to war in order to obtain the necessary land for food purposes. Indeed, the chief object of early Greek warfare was to secure land and supplies. Fertile sections were occupied and the existing population was driven off or forced to pay tribute. It was customary to make raids by land, across the borders of neighboring prosperous sections, and carry off the needed supplies. Thus war was really state robbery and became an established policy of the city-state.[6] Herodotus and other ancient authors have given us descriptions of this warfare to procure the food that was so badly needed.

While war was the most direct and immediate method of

[5] Zimmern, *The Greek Commonwealth*, pp. 223, 228.
[6] *Ibid.*, pp. 239, 242.

securing the needed supplies, emigration of the surplus population was more difficult and less satisfactory. The need of food, therefore, stimulated policies of colonization to secure an outlet for excessive population. Great expeditions set out from the sheltered harbors of Greece to settle in Asia Minor, Italy, Sicily, and Marseilles. But Greek colonies were not established as the private ventures of enterprising merchants or associations. They were part of a carefully organized scheme of state-promoted emigration.[7] While other ancient colonies were frequently trading centers, the Greek colony was an agricultural community, patterned after the cities of the homeland. Zimmern says that it was only through chance that the later development of some of the colonies was in the direction of commerce. The colonists carried with them the old agricultural tradition. As a matter of fact, they were largely deposed cultivators who at home had been crying out for land. Regulations governing the establishment of the Athenian colony in Thrace show that ten land-distributors were chosen, one from each tribe. The first occupants of the new territory were to build a fortified inclosure. Each man received a site for his house within the fortification, and three quarters of an acre of land outside the city.[8] The Greeks took great pains to select a favorable site for their colonies, and consulted the oracle of Delphi. Some of these colonial settlements grew into regular trading centers for exchange of wares. By means of their colonies in the East, the Greeks were able to establish connections with the commercial routes from Persia and the Caspian, and even with the river routes to the North, whence fur and amber came.

Communication with these different peoples and exchange of wares had a broadening influence upon the Greeks. They became acquainted with new and different customs and encountered strange institutions. The population of the cities

7 Zimmern, *The Greek Commonwealth*, p. 247.
8 *Ibid.*, pp. 247, 248.

became cosmopolitan, for foreign traders came from their colonial settlements. Athens, indeed, had quite a large element of permanent foreign residents, known as "metics." At one time they numbered about 10,000 and with their families, must have comprised fully 50,000 people. The metics paid a tax of twelve drachmas a year for the privilege of trading in Athens under the protection of the state. A drachma was equivalent to eighteen cents in our coinage, but its purchasing power was much greater.

One of the differential culture traits of Greek civilization was the invention of money and the elaboration of this culture trait into a money economy, a culture complex of great importance for the standard of living and class relations.

2. Social Conditions and the Class Struggle

The commercial activities of the Greeks brought about the introduction of this money economy. Aristotle remarks that "as the benefits of commerce were more widely extended . . . the use of a currency was an indispensable device. As the necessaries of nature were not all easily portable, people agreed, for purposes of barter, mutually to give and receive some article which, while it was itself a commodity, was practically easy to handle in the business of life. Some such article, as iron or silver, was at first defined simply by size and weight, although finally they went further, and set a stamp upon every coin to relieve them from the trouble of weighing it. . . ."[9] From early times, barter had existed in the Ægean, and eventually certain articles were exchanged so often that they became a sort of commodity-money. We find the slave-unit and the ox-unit. But the disadvantage of these mediums of exchange was that slaves and oxen vary individually, and it is difficult to define the unit of value. The superior convenience

[9] *Politics*, Bk. 1, ch. ix, Welldon.

of metallic money inevitably asserted itself, for equal weights and quality of metal can be easily established. Coined money seems to have been introduced about 700 B. C. With the establishment of a money economy came consequences of far-reaching psychological importance which the English economist, William Cunningham, has outlined.[10]

Money economy and social relations. The invention of money made relations of persons and the exchange of things clearer and much more orderly. In a natural economy, men were bound to one another by customary ties. Mutual obligations were discharged in service or in kind; consequently it was difficult to distinguish the physical transfer of goods by gift-making and tribute from exchange of goods by commerce. Again, it was impossible to determine whether the serf paid rental for his small holding of land in the form of service, or whether he received wages in the use of his land. In a natural economy, these concepts were not distinct. But in a money economy, gift-giving and commerce, wages and rent were easily distinguished, and, to this extent, economic thinking was clearer and more logical.

The introduction of a money economy made for freedom of individual action, in addition to facilitating clear thinking. While the slave or the serf did his labor under compulsion, the free man worked for the sake of reward.[11] The laborer enjoyed greater independence when his reward was paid in money. Under these circumstances, he decided for himself whether he would work much for a larger reward, or whether he desired to have more leisure and a smaller return. In a natural economy, payment was made in shelter or rations, and consequently the workman's expenditure and place of habitation were determined without regard to his own desires. When the laborer's return was in

10 *Western Civilization in Its Economic Aspects (Ancient Times)*, Cambridge, 1902, pp. 73–74, '85, 94–100.

11 *Ibid.*, p. 74.

money, he might spend it as he chose. The introduction of money-payments for labor made a larger proportion of the people masters of their own time. The free man differed from the slave or serf in that the former had free time, and it became a matter of choice as to how he should occupy that time. If he chose to spare from manual tasks time to devote to affairs or self-development, he enjoyed some leisure for political life.

In addition to freedom in the disposal of his time, money economy favored freedom to migrate and to change employment. As long as the state was maintained by the personal rendering of service, men were bound to give payment in kind, and were restricted to some definite place. But with the introduction of money taxation, a man paid taxes and was free to move, "so long as his property is within reach, and can be claimed for public purposes."[12] Industry also was affected by the change. In natural economy, the laborer must work at the traditional occupation of his family, and train his son to follow him. It was well nigh impossible for him to change his employment. But when accumulated hoards of wealth might be realized in money, the capitalist could readily embark on new enterprises by selling out his establishment and reinvesting his capital in some other enterprise. Thus in a money economy persons who possessed even small funds of convertible wealth might change their employments, whereas in the primitive natural economy they were doomed to pass their working lives in the same old ruts as their forefathers. Hence the intervention of money opened up possibilities of progress and personal independence unknown to primitive economy.

In the Greek city-states, the citizens were emancipated from the constraints of the customary obligations, because money made them free to buy, sell, and bargain with one another. Making for clarity of thought, freedom of action, and personal independence, money economy helped to

[12] *Western Civilization*, pp. 94–95.

separate economic and political affairs, and constituted a factor of no small importance in establishing that degree of political freedom for which the Greek cities have been justly famous.

Food, money, and debt. The food supply is a matter of utmost concern for every large community. Attica was no exception to this rule. Ordinarily, food is obtained from the neighborhood which the community inhabits. But when population increases, the law of diminishing returns at length begins to operate, and the people are forced to import larger and larger proportions of their food. In primitive times, the population of Attica was readily maintained by the food resources of the region, and peasants cultivated small plots of land. Each family group was self-sustaining. As Athens grew, these earlier conditions gave place to new problems which affected the food supply.

The introduction of a money economy tended to disturb traditional economic relations. Accustomed to meeting his obligation to capitalist, landlord, or state, by service or payment in kind, the demand for payment in money compelled the poor farmer to revolutionize his whole plan of economic existence. To obtain money to meet the demands of a tax-collector, he must sell his produce for money. In lean years, when prices were high and his crop was too small to secure gain, he had to compete with imported produce. In good years, the price was apt to be low, and he could not afford to set aside a surplus against poor seasons. Moreover, methods of marketing farm produce were primitive, and it must have been difficult to sell it. As agriculture had outgrown the primitive stage in which it was pursued to supply the needs of a cultivator's household alone, and producing for the market had become a trade, the farmer needed to procure advances of money from the capitalist to enable him to purchase the seeds and materials with which to carry on his business. Thus it became customary for rich men to assist the poor peasant by making advances

in silver on security of the debtor's land.[13] Under this system, it was quite likely that, in years of large crops, the farmer could not sell at a price high enough to cover his expenses and pay the debt, so that the debt was carried over from year to year and accumulated. Finally, it often reached an amount which made redemption hopeless. The capitalist then took the land in satisfaction of the debt, or sold the poor peasant and his family into slavery. In this manner, small holdings were gradually consolidated into large estates, cultivated by debt-slaves. Competition with the larger slave estates was ruinous for the small free farmer, even if he had not incurred a large debt upon his land. The close proximity of the debt-slave population, with its inefficient working methods and low standards of living, must have had a demoralizing effect upon the free farmers who remained.

This agrarian depression made it inevitable that larger and larger numbers of yeomen should desert their small country holdings and seek occupations in the city. But it still was possible to work the large estate for a profit, because slaves were used to cultivate the ground, and slaves could be cheaply maintained. Although society had adopted the money economy, the internal management of the capitalistic slave estate was still based on natural economy. It was a self-sufficing economy in that the slaves produced food for themselves and for their master's household. The land was devoted more and more to the cultivation of the most profitable crops: fruit, olives, and other products which it was permissible to export, and for which there was little competition in the Athenian market. Thus it came about that the depression of the yeomen farmer-class, and the devotion of estates to the cultivation of luxuries, discouraged the production of grain. Athens became more and more dependent upon importation of her food supply.

Slavery in Greece. Slaves increased in numbers very

[13] Plutarch, *Solon*, 15.

rapidly and were obtained from many different sources:[14]

(1) Those born slaves usually remained slaves, the condition being hereditary. In general, however, it was cheaper to buy a slave than to pay the cost of rearing him to the age of labor.

(2) Slaves were obtained by the sale of children of free parents. The sale of children, however, was not permitted in Attica, nor their exposure, except at Thebes.

(3) A third source of the slave supply was by action of the law. Up to the time of Solon, the debtor became the slave of his creditor. In Athens, freemen and metics were likely to be sold as slaves if they did not discharge their obligations to the state.

(4) A fourth source of slaves was by capture in war. Sometimes, even Greeks were reduced to slavery by other Greeks. After Thebes was taken by Alexander, it is said that thirty thousand women and children were sold as slaves.

(5) The fifth source of slaves was through piracy and kidnapping. Pirates descended upon the coasts and, carrying off captives, sold them as slaves. In case a victim was ransomed from the pirates, by Athenian law he became the slave of his redeemer until he had paid the purchase price in money or labor. There was also a brisk trade in carrying off children and rearing them as slaves.

(6) The final source of slaves was from commerce. A regular slave-trade developed. Syria, Pontus, Phrygia, Lydia, Galatia, Paphlagonia, and Thrace were sources of the commercial supply of slaves. Since Asiatics were most easily controlled, they were of high value. The eastern princes held Greek slaves in high esteem, especially female musicians and dancers. Athens derived revenue from the tax on the sale of slaves. Besides Athens, the principal slave-markets were at Cyprus, Samos, Ephesus, and Chios.

[14] Ingram, J. K., *A History of Slavery and Serfdom*, London, 1895, pp. 15–20.

Slaves were sold for various prices. A Carian sold for 115 drachmas, or $15; a Syrian could be purchased for 301 drachmas, or $42; three Thracian women sold for from 135 to 222 drachmas, that is, $18.75 to $31. Slaves under the working age could be bought for as low as 153 drachmas, or $21. The slave who was skilled at a trade was more highly valued. A courier would sell at a price of ten minas, or from $135 to $155. At a household auction at Athens in the year 415, the average price for men was 166 drachmas, and for women 170.[15] Xenophon estimated that, whereas it cost 540 drachmas ($74) to maintain a free laborer for a year, a slave who could accomplish the same amount of labor would cost but 180 drachmas ($26). Considering the original purchase price of the slave as 300 drachmas, the saving on slave-labor would, in fifteen months, entirely wipe out the purchase price. Thus the slave would pay for himself in fifteen months, and ever afterwards his labor, beyond the cost of maintenance, would be net gain.[16]

Since slaves were obtained from so many diverse sources, they represented many nationalities. Decrees of emancipation and burial inscriptions give us a clue to the large proportion of foreigners among the slaves. Usually, very few Greek names appeared in these decrees. From one list of 124 manumissions, there were 22 Syrians, 22 Thracians, 8 Galatians, 6 Italians, 4 Armenians, 4 Sarmatians, 4 Illyrians, not to mention Phœnicians, Jews, Egyptians, and Arabs.

We cannot give an exact account of the number of slaves. At a census taken in 309 B. C., it was estimated that there were 21,000 citizens in Athens and about 400,000 slaves in Attica. Perhaps these figures are made unduly large by the inclusion of metics. As early as the fifth century, conservative estimates put the slave population at two-fifths of the

[15] Zimmern, *op. cit.*, p. 392, note.

[16] Zabrowski, S., "Ancient Greece and the Slave Population," *Annual Report of the Smithsonian Institution*, 1912, pp. 602, 605.

population of all Greece. But slaves were not found in great numbers in the interior; they were found chiefly at commercial and manufacturing centers, and in the richer agricultural regions. M. Wallon has estimated that the number of slaves in Attica devoted to domestic services was 40,000; in agriculture, 35,000; working in the mines, 10,000; and 90,000 engaged in manufactures and commerce.[17] Cavaignac estimates that in the year 431 B. C. there were 20,000 adult male slaves in the Athenian mines.[18] The number of slaves owned by private persons was sometimes considerable. Hipponĭcus, a rich man, owned 600, the father of Lysias employed 120 in the workshop of his armor factory; Nicias, the general, employed 1000 in the mines.[19]

In general, the Greeks treated their slaves well. Masters had an economic motive in kind treatment, for the varied activities of the slave made him a valued possession. Indeed, the slave often held a position of importance and responsibility in the family. Although generally excluded from sacred ceremonies and public sacrifices, slaves often participated in domestic rites. They were also allowed to enjoy a part in popular festivals. Sometimes the master of the house would even erect a monument testifying to his affection and regard for a deceased slave. The Old Oligarch speaks of the Athenian slaves as almost indistinguishable in appearance from regular citizens.[20] On the other hand, the slave laborers in the mines were chained together and worked in gangs. Under these conditions they were branded and treated as beasts. Many worked as deep as 250 feet below the surface, where the dampness made the death rate very high.

The Athenian law did not leave the slave without protection. If a master killed a slave, he might be temporarily exiled. The slave who killed his master could not be pun-

17 Ingram, *op. cit.*, p. 22.
18 Zimmern, *op. cit.*, p. 393, note.
19 Gulick, C. B., *Life of the Ancient Greeks*, New York, 1911, pp. 66–67.
20 Zimmern, *op. cit.*, p. 378.

ished by the victim's relations; they were obliged to hand over the slave to a magistrate, who dealt with him by due process of law.[21] In some cases, however, the only recourse against the cruelty of masters was in flight. The slave who saved a sum of money by labor and economy would often be required to pay the money to his master in return for freedom. The cost of manumission varied. One hundred and sixty-two redemption prices are recorded as ranging between 300 and 500 drachmas, or $41 to $69. Two were as high as 2000 drachmas, or $278; 312 women were ransomed at prices ranging from 300 to 500 drachmas.[22] Thoughtful Greeks recognized that the most satisfactory way of supplying a slave with an incentive to do good work was to offer him the prospect of ultimate freedom.[23]

Imported grain. In agricultural industry the free yeoman farmer, discouraged because of the hard conditions under which he labored, was gradually driven from the field. There was a tendency for small, private holdings of land to be consolidated into large estates. Capitalists employed slaves to raise the crops, but, since it was more profitable to grow fruit and olives than grain, a smaller and smaller proportion of the Athenian grain supply came from the immediate neighborhood. Athens was forced to import her grain from Pontus, Thrace, Syria, Egypt, Libia, and Sicily. To protect the course of her grain ships from interruption by enemies, Athens fortified the promontory of Sunium and provided convoys for the fleets. As merchants were inclined to inquire the range of prices at different ports and select the market which offered the highest prices, it was difficult to have the grain shipped to Piræus in preference to other ports. To compel the consignment of grain to this port, a law was made forbidding the loan of money on bottomry —money loaned on the security of a ship and cargo—to

[21] Ingram, *op. cit.*, p. 26.
[22] Zabrowski, *op. cit.*, p. 606.
[23] Zimmern, *op. cit.*, p. 386.

any vessel which did not bring a return cargo of grain to Athens.[24] Vessels laden with grain were compelled to sell two-thirds of their cargo in Athens, and only one-third could be exported.[25] But middlemen speculated in grain and frustrated the effort to have an abundant food supply. Athenian wholesale dealers bought up the grain upon its arrival, and held it for a rise in value until they could retail it at exorbitant prices. Laws were made with a view to controlling the antisocial operations of unscrupulous middlemen. Officials were appointed to keep account of the grain and the prices at which it was sold, in order to enforce a measure which limited the amount that each man might purchase to fifty measures (about 75 bushels). The officials also fixed a selling price which would allow only a moderate return on the sum paid. The problem was also partially met by public granaries at Athens, wherein a public stock of grain was kept and from which at intervals, as we shall see, food was sold at low prices to the poorer citizens.

Social unrest and the class struggle. The poorer classes in seventh- and sixth-century Attica found it hard to make a living. Although prices were higher, wages remained about the same. A few capitalists were becoming richer and richer, while the common people were growing poorer and poorer. Because the wealth remained in comparatively few hands, the people were discontented. They wanted new laws which would grant them greater rights and help relieve them from the burden of debts. The first codification of the laws was made under Draco, in 621 B. C. Prior to this date the laws, being unwritten and known only to the nobles, were interpreted by them for their own advantage. But Draco's codification of the law failed to correct the real conditions which were responsible for so much misery among the lower classes. The nobles, in their desire to

[24] Böeckh, *Public Economy of Athens*, i, 77–78.
[25] Cunningham, *op. cit.*, pp. 103–104.

acquire all the wealth in the state, forced debtors upon their lands to become slaves. When a lord laid claim to a field or plot of land which he desired, he placed upon it a boundary stone to indicate that it belonged to him.

The social reformers. In response to growing popular discontent, the aristocrats were compelled to grant the poorer citizens greater rights in the state. Solon, a man of broad and liberal views although of aristocratic descent, was appointed to change the laws in 594 B. C. Solon first attempted to correct economic troubles by means of a broad program of social reform. He ordered the immediate removal of all boundary stones, in order that tenants might be released from payment of debt to the nobles. As he desired to secure freedom of citizens in the future, he drew up his so-called personal liberty laws. He first canceled all debts resting upon security of land. From public and private funds, he attempted to redeem Athenians who had been sold into slavery in foreign lands. He prohibited the selling of a child or a kinswoman into slavery. No one ever after should lend money on the security of the person. Besides important agrarian reforms, Solon made certain improvements in the constitution. Among his constitutional reforms was a provision that the poorest class, as well as the others, was to be admitted to the popular supreme court. Because attendance at these meetings had long remained unpaid, only the well-to-do could afford to attend them. By admitting the *thetes* to this assembly, Solon gave them the power of protecting their own freedom and property forever.

In addition to these general legislative reforms, this sagacious statesman drew up certain special laws. He wanted to prevent famine by keeping at Athens the food produced within the country. With this in view, he forbade the exportation of all products of the soil, with the exception of olive oil. To foreigners who were willing to come to Athens with their families in order to carry on a trade, Solon gave

facilities for acquiring citizenship. To encourage skilled industry, he compelled every man to teach his son a trade. Solon was wise enough to see that, since the soil was not particularly fertile and hence largely unfit for agriculture, the country could hope for prosperity only by engaging in manufacturing and commerce. To promote commerce, Solon adopted a silver coin as the money standard for his city. This was a great advantage because it insured trade with other cities and with certain prosperous colonies which used the same standard. These laws helped to develop Athens along manufacturing and commercial lines. Through intercourse with other countries, the Athenians discovered many luxuries and entered into commercial relations with Sicily, Italy, Cyprus, Egypt, and Lydia.

The rights and privileges which the people had gained under Solon's rule were so new to them that they failed to appreciate their importance, and the class struggle within the state continued. The people were divided into three natural classes: the plainsmen, or rich landowners; the shoremen, who were mainly traders living near the coasts; and the hillmen and farmers, who lived near the hills. Taking advantage of the popular discontent and commotion a certain noble named Pisistratus proclaimed himself leader of the hillmen. As the champion of their cause, he obtained enough power to rule the state. Fortunately, the machinery which Solon had invented still continued to operate, in spite of the fact that Pisistratus was the real power, for the latter was really like a political "boss," although the Greeks called him a tyrant. His most far-sighted enterprise was an attempt to establish colonies on the Hellespont, in order to enlarge the trade of Athens. At his death, the people experinced two years of civil strife; then a noble named Cleisthenes, leader of the popular party, succeeded in putting an end to the class strife. Originally, the plain-, shore-, and hillmen, being united in their activities, enjoyed considerable power. Cleisthenes redivided

the townships of Attica in a new fashion. He grouped small local communities into ten new tribes, so that the townships of the same tribe were not all together, some being located near the hills, others in the plains, and the remaining townships on the shore. By breaking up the old tribal communities and substituting small separated townships, the unity of each of these antagonistic classes was broken, and they ceased to give trouble.

3. Industry and Social Economy

Since industry always develops with commerce, Athens became the manufacturing, as well as the commercial, center of Greece. Of course, Athens never became a great industrial center like the factory cities of to-day, for she produced chiefly for home consumption, and most of her exports were the manufactured products of small shops. From imported raw material, Athens manufactured shields and other metal work. She exported her surplus of wine and oil, and also clay jars, painted vases, statuettes, blocks of Pentelic marble, and the creations of her silversmiths.

Xenophon tells us of one merchant who ground only barley meal and yet, from the earnings in this business, was able to maintain not only himself and his domestics, but many pigs and cattle besides. Frequently he realized such large profits in the business that he contributed to the burden of public services. Another man lived luxuriously from the earnings of a bread factory, while others gained a good livelihood out of the cloak business and the manufacture of shawls and sleeveless tunics. A shoemaker is said to have received from the earnings of his employees two obols—about five cents per head—or $16.50 a year. Demosthenes had an income of $725 a year from two shops which he maintained; one, a cutlery; the other devoted to the manufacture of beds.

Most of the industrial activities of Athens appear to have been carried on by workmen in their own shops and homes. The handicraft-domestic system seems to have quite generally prevailed.[26] Industrial workers were craftsmen, not factory hands like the workers of to-day. We must remember that in Greece agricultural work was still supreme. It was regarded as the most commendable occupation because it made those who followed it self-sufficing and independent of others; moreover, it was the traditional occupation. Industry was always subordinate to tillage. The average Greek family was approximately self-supporting. The workers made their own plows and pruning-hooks, spun and wove their garments, constructed and repaired their houses, and carried on all the necessary activities of their lives without depending upon outside help.[27] Nevertheless, there was some degree of specialization in industry. The lame man, who could not work in the field, became a blacksmith at the forge. In time it was recognized as undesirable for a family to make its own pots, baskets, and plows, when some specially trained craftsman could do the work far better.

In sixth-century Athens, men made a livelihood by their specialties. Solon has given us a list of some of the skilled occupations of his day: the trader, the farmer, the metal worker, the weaver, the poet, the diviner, and the doctor.[28] In the fifth and fourth centuries B. C., the division of labor included: millers, grain jobbers, bakers, fullers, and dyers, manufacturers of garments, hat makers, jewelers, masons, furniture- and cabinet-makers, potters, makers of shields, spears, bows, knives, helmets, and breast-plates. The division of labor in furniture- and cabinet-making was carried out to a considerable degree of specialization. There

[26] Cunningham, *op. cit.*, p. 110.
[27] Zimmern, *op. cit.*, p. 252.
[28] *Ibid.*, p. 253.

were door-, bed-, chair-, and chest-makers, and turners who rounded the legs of chairs and tables.[29]

The stone contractor was himself a workman and held a very different position from the modern contractor who simply organizes hired help. He was really a master-mason who worked by the side of his men. There appears to have been little rivalry and less competition among these simple craftsmen. In an armor manufactory inherited from his father, the orator Lysias, himself a metic, employed 120 slaves. A record of payments made by the state for the construction of the Erechtheum in 409 B. C. relates that wages were paid to 27 citizens, 40 free outlanders (metics), and 15 slaves. Other records show that various groups of workmen—freemen, foreigners, and slaves—were employed upon public works. In these activities, the slaves and non-citizens appear to have done the same tasks as the citizen workman. The three classes worked together and seem to have been inextricably mixed.

The ceramic factory. A potter's workshop was a sort of primitive factory. But here, as in the stone-yard, the master worked at the same job with his apprentices, encouraging them in their efforts and superintending the handiwork. The division of labor in the ceramic factory was far less minutely specialized than with us. A considerable degree of individual skill was demanded of the workman, and he was capable of different tasks. Familiar with all details of the craft, the workman's activity was not a mechanical one. A proof of the absence of modern standardization in product is seen in the fact that, of hundreds of vases discovered, none is devoid of originality, nor are any two identical. Yet there was some division of labor, for we find craftsmen engaged in working the clay, preparing the glaze, preparing the colors, painting, taking care of the ovens, and moving materials. The establishment was divided into two main parts: a workshop, where the turning, shaping,

[29] Gulick, *op. cit.*, pp. 229–233.

and polishing of the vases took place; and a place for the baking and drying of the pots in the furnace.[30] In all, there must have been several buildings; a room for the vase turners and makers, a room for the painters, ovens in the court without, and a shed for storage of raw materials and for kneading and refining the clay. In addition, perhaps, there was a warehouse and a salesroom. Upon a vase from Ruvo, the studio is represented as containing four painters, and thus it may be concluded that a modest staff would amount to at least fifteen or twenty workmen. Pottier says that a potter like Douris must have had a factory of some size; and yet the investment in equipment and material could not have been large, for, besides refined clay of different colors for glazing and retouching, the main materials consisted of lusters to brighten the natural color of the clay, wheels and molds, rules and compass, sharp points for sketching, and brushes of all kinds.[31]

The organization of labor. In this craftswork, no great investments of capital were needed. In fact, the materials were usually provided by the customer who gave the order. When you wanted a pair of shoes, you took your leather to the cobbler's and had him shape it to your foot. It was not the business of a craftsman to buy his supplies. They were brought to him and he labored upon them to make them serviceable.

Our modern craftsmen select strategic situations to carry on their trade—places where they are free from competition of a fellow-worker. It was quite the reverse in Athens. Each craft had its own quarters. Thus, there might be the "street of the sculptors," or the "street of the box-makers," and the like. There was no competition between shops, but merely the friendly rivalry of those engaged in performing the same service and making the best article

[30] Pottier, E., *Douris and the Painters of Greek Vases*, London, 1909, transl. by B. Kahnweiler, p. 23.

[31] *Ibid.*, p. 26.

they could possibly manufacture. These arts and crafts had their own associations, but not for economic gain. Workmen did not associate to protect their own interests, but united on social and religious grounds. Since they were not looking for riches, but rather for honor and a decent livelihood, they did not raise or cut prices, but allowed the prices of their wares to be fixed by custom.

In Greece, craftsmanship covered a wider sphere of activity than with us. Every specialist was a craftsman. As such, all earned a decent living, and thus it was seldom that they worked for wages. They might with dignity receive wages from the city, since they were citizens, but, as freemen, they scorned wages from their equals. Interpreting Salvioli, Zimmern says: "Such an arrangement would have put the craftsman almost in the position of the slave. His aim in life was very different: to preserve his full personal liberty and freedom of action, to work when he felt inclined and when his duties as a citizen permitted him, to harmonize his work with all the other occupations which filled the life of a Greek, to participate in the government, to take his seat in the courts, to join in the games and festivals, to break off his work when his friends called him out to go to the market-place or the wrestling school, or when his colleagues in the craft were holding a dinner—all of the things which were incompatible with a contract at a fixed wage." [32]

The contemptuous attitude of the ancient Greeks toward manual labor was the result of a point of view which differs so fundamentally from our own that it is easily misunderstood. The spirit which animated the Greek worker was ordinarily one of joy in his work, for labor, as such, was not despised. This pleasure in labor was experienced only when there was independence and freedom from restraint. Consequently, when men found it necessary to break in upon their time for political duty because of the necessity of

[32] Pp. 265, 266.

working for self-support, such labor was regarded as demoralizing. The *thetes,* who labored by the day for a money wage, were to that extent dependent upon others, and hence held in contempt. Small traders, who sold their goods in person and led a sedentary life, making but trivial gains and reputed for their avarice and undignified haggling, were considered inferior. Artisans, who worked indoors at their trade, appeared to the Greeks as much deprived of personal liberty and free, out-of-door life as slaves. Such work was therefore contemptible, and industrial arts were called slavish. Even great painters, sculptors, and artists were in some disrepute, because they accepted money for their work. But the extensive operations of great wholesale merchants gripped the imagination of the Greek to such an extent that the activities of these large operators were much admired. The naïve idealism of this attitude toward productive labor is well explained by Tucker.[33] He says: ". . . No people in the world ever set such a value on outward superiority of person and manners as did the classical Athenians. . . . In the first place, they did not despise work, as such, nor were they constitutionally indolent; what they disliked was the uncomely, physical effects of labor, especially of indoor labor; they detested that which made them acquire a stoop, or stunted the limbs, or misshaped the hands, or begrimed the person. In the second place, they had an intense passion for personal independence, and their ideal of personal freedom of action and speech could hardly be attained by one who had to serve and court the custom of his neighbor. In the third place, the vulgar and material concerns of the lower occupations prevent the mind from gathering the culture and refinement which come of good company and abundance of intellectual intercourse."

These attitudes and social values are such a striking

[33] *Life in Ancient Athens,* London, 1911, pp. 79–80. See also Zimmern, *op. cit.,* pp. 266–267, and Gulick, *op. cit.,* pp. 188–190, 233–234, 236–238.

contrast to the mores and folkways of contemporary commercialism that they are at least refreshing, if not an actual challenge to our own conventions.

Charity and social economy. Since many of the citizens, although free men, derived no income from shops or properties, they eventually became objects of public support. Whereas in Crete and Sparta the citizens were wholly supported from the public treasury, the Athenian citizens were aided in a variety of ways. We have seen how Solon tried to preserve the independence and dignity of the laboring men by canceling debts and mortgages pledged on a security of person; and we have seen how his successor, Pisistratus, tried to postpone the social decline of the people; but the methods of these legislators were not altogether successful. In order to relieve the situation, Athenians were sometimes selected from the two lowest classes and emigrated. Plutarch says: "By this means he relieved the state of numerous idle agitators and assisted the necessitous." In some respects, this policy of emigration was a beneficial method, because it gave to persons who were formerly idle, the opportunity of owning property and becoming self-respecting and self-supporting. A less satisfactory method of caring for idle citizens without property was by supplying corn at reduced rates. The public granaries, which we have mentioned in another context, were erected at public expense, and provided considerable stores of grain. Since the maintenance of this large number of idle citizens depended upon the grain fleets, Athens was very much concerned about the safety of her fleets. In general, this public corn was distributed to adult citizens of 18 years of age, and others whose names appeared upon the official registers.

For those who were unable to earn a livelihood because of physical disability or infirmity, there was a system of public relief. A citizen who had property valued at not

more than $60 was qualified to receive this aid.[34] State-pensioned cripples received an obol a day.[35] The senate, when it examined the case of Socrates, awarded a bounty of one or two obols a day—about five cents. There was also a special fund for the orphans of those who had fallen in war.

During the period of Athenian commercial expansion, large fortunes were accumulated by a few persons, but after the Peloponnesian War, the wealth of the country ceased to grow. Since the people had become largely townfolk and had lost their primitive thrift, it was not possible to return them to the country for support. The main reliance for the maintenance of the governing class of citizens was therefore on emoluments. These emoluments consisted of payments to citizens for attendance at public gatherings. According to Plutarch,[36] the allowances for attending theaters, payments for performing public duties, and other practices which built up bad habits and changed the people from a sober, thrifty folk who maintained themselves by their own labors, to an extravagant and intemperate rabble, were initiated by Pericles. It all came about because Pericles found that Cimon, his competitor for popular leadership, was accustomed to issue invitations to dinner, give clothes to the aged, and in other ways to assist the masses, with the object of buying their support. Pericles, therefore, bought over the people to his support by moneys allowed for attendance at shows, jury duty, and other public services.

In considering these emoluments, it should always be remembered that the Athenian citizen regarded his political duties as of paramount importance. A free citizen should devote his time to public service in assemblies and law courts. If he had to support himself by his own labor, he

[34] Loch, C. S., *Charity and Social Life*, London, 1910, p. 28.
[35] Gulick, *op. cit.*, p. 249.
[36] *Pericles*, Clough's revision, 1912, vol. i, p. 234.

could not be the independent political unit that he ought to be, and participate in these activities. Consequently he was not considered a dependent because he received a public allowance sufficient for his support.

Citizens over thirty years of age were elected to the Council of the Five Hundred (*boulê*), and received five obols (15 cents) a day for attendance. They also enjoyed exemption from military service. The Popular Assembly (*ecclesia*) was composed of citizens over eighteen years of age. The fee for attendance was, at first, one obol a day; in the fourth century it was two obols, and later became nine obols. Since the minimum attendance of 6000 citizens was necessary to transact business, a considerable number of persons must have been maintained in this way. The average size of the body of citizens composing the law courts was 6000, of whom 1000 were substitutes. The pay was two obols a day in the time of Pericles, and was increased to three obols a day by Cleon.[37] It is apparent that public emoluments reached a large proportion of the citizen body, since by 404 B. C., after the Peloponnesian War and the plague, there were only about 20,000 male citizens left.[38] Böeckh, in his *Public Economy of Athens*,[39] estimates that in 384–323 B. C., a poor family of four free persons could live on about six to nine cents a day, and this estimate includes rent. Thus, a citizen who attended an assembly or a court would receive sufficient compensation to cover the expenses of his subsistence. On the other hand, the day-laborers received about ten cents a day. At public festivals, citizens received five cents a day. In addition to these public affairs, there were religious feasts, with a free meal accompanying them. Finally, there were numerous confiscations of private property, and the poorer citizens shared in the distribution.

[37] Gulick, *op. cit.*, pp. 206–215.
[38] *Ibid.*, p. 60.
[39] Eng. transl., pp. 109, 117.

Besides these public forms of benevolence, there was much private liberality. Wealthy citizens considered it a part of their civic duty to share in the expense of certain public services. It is recorded that at a trial, in 425 B. C., a citizen submitted evidence to show that his father had expended more than ten thousand dollars during his life in paying the expenses of choruses, fitting out vessels for the navy, and paying an income-tax to provide for emergencies. In addition to this, he frequently helped poor citizens by granting marriage portions to their daughters and sisters. He paid the funeral expenses of others, and even ransomed some.[40]

The effect of this extensive public aid was most unfortunate. It tended to pauperize the citizens, to discourage enterprise and thrift among the wage-earners. It undermined the independence and self-respect of the workers. Aristotle observed the bad effect of indiscriminate distribution of public aid to idle citizens. He said it was like pouring water through a sieve, and expressed the opinion that the state should make prosperity permanent. Many of his ideas were quite modern. For example, he thought that aid once given should be adequate, and that charity should be voluntary, rather than compulsory. To make the aid adequate, he suggested that public relief should be given in such large quantities that the poor might acquire small farms or be set up in business, and thus permanently rehabilitated.

The seeds of decline. This account of social life in Greece has included occasional reference to conditions the persistence of which would bring about decay. The Greeks were short-sighted in their consumption of wealth. Greek statesmen drew recklessly on their mineral resources, seeming to believe that their supply of silver was inexhaustible. In time, of course, it was worked out. The soil, which may ordinarily be preserved for generations of use by proper

[40] Plutarch, *Cimon.*

tillage, the use of fertilizers, and crop rotation, was also exhausted by wasteful slave cultivation. The yeoman debt-slave was a reluctant worker, unskilled and inefficient, and consequently wasteful. By continued cropping, the fertile sections of Greece, at best not extensive, were exploited.

Greek idealism has given us some of the most superb artistic products that have come from the hand of man, but this same idealism was accompanied by an economic misuse of capital.[41] When accumulated sums of wealth and treasure are laid out in such productive works as irrigation canals, public roads, harbors, large-scale intensive agriculture, an economic return is assured, for the investment yields continuous income and thus new opportunities for further progress in wealth are offered. But when the wealth of the nation, the accumulated treasure, the skill and labor, is sunk in beautiful public buildings, there is no economic return upon the investment. During construction, these beautiful buildings afforded employment, but when completed, they served no economic purpose except that of display. They could not be utilized for the production of more wealth, nor did they act as an incentive to trade. Thus the wealth of the Greek was deliberately squandered in unproductive works; his wealth was invested in forms which did not lead to the development of natural resources or trade. The total sum spent on public works in the period 447 to 432 B. C. is estimated at $47,000,000, a vast sum for those days.[42] There was no means of withdrawing the capital so invested and turning it to other account. It is true that these beautiful architectural creations gave esthetic income, but such an income is not sufficient when the civilized community is surrounded by the menacing hostility of barbarians.

The population of the cities became a restless, pauperized element, maintained by low-priced public grain, private

[41] Cunningham, *op. cit.*, pp. 119–123.
[42] Zimmern, *op. cit.*, p. 406.

liberality, and emoluments. In this way, the thrifty habits of the people were undermined and their character demoralized. The Greeks never understood the law of diminishing returns in economic life, and, like other ancient peoples, were equally ignorant of the important sociological principle that the resources of citizenship are best conserved by maintaining those conditions which encourage a spirit of self-respect, self-reliance, independence, and habits of self-help among a people. The idealism of the Greeks was superb, but they seemed to lack a certain hard-headed practicality which takes account of the homely basis of citizenship.

CHAPTER V

THE CIVILIZATION OF ROME: A STUDY IN CULTURAL CHANGE

THE essential psychic unity of mankind inevitably expresses itself in responses to certain gross and fundamental factors of the geographic environment. These responses take the form of culture traits often surprisingly similar in the large when different civilizations are compared.

1. The Land and Militarism

Just as Greece was for many centuries the early frontier of the ancient world, so the Italian peninsula became its later frontier. Physical conditions were as important in the early development of Roman dominion as in the early development of Greek power. The Italian peninsula, jutting out into the middle of the Mediterranean, was strategically located for favorable development, so that from early times traders, immigrants, and adventurers came to Italy. Because of her central location, Italy was directly in the midst of the maritime life of the Mediterranean. Whether trade went east or west, north or south, Italy was so situated as to have her share in this commercial development. From the Italian peninsula it was not far to the Grecian peninsula on the east, nor far to Africa to the south. By Sicily, to the west, the way lay open to Spain through Corsica and Sardinia.

On the other hand, the exposed position of Italy had the disadvantage of offering easy access to invasion by en-

emies. Hence political unification was essential if the inhabiting peoples were to survive in the struggle with alien invaders, and motives of self-preservation first led Rome to policies of military expansion.

Considering the Italian peninsula itself, its area is about twice that of the state of New York, being about seven hundred miles long and averaging about 100 miles wide in the central part. Along the western coast of Italy, there are more numerous and better harbors than on the precipitous eastern coast. It was natural, therefore, for the Latin people living at Rome to spread their influence to the west, where they came in contact with the fresh, virile peoples of Spain, Gaul and western Europe. These peoples assimilated the vigorous Roman culture more readily than the peoples of the East.

The land surface of Italy was favorable to social development. To the north were the fertile, alluvial plains of the Po River. The great mountain masses of the Apennines which extend along the northwestern coast of the mainland soon run eastward and then, turning southward, pass the center of the peninsula, thereafter running somewhat nearer to the eastern coast. The consequence is that the eastern slope is more abrupt and devoid of harbors and navigable streams, whereas the western slopes are gradual and terminate in fertile coast plains.

The Apennines do not cut Italy into isolated valleys in the way that Greece is divided, because the spurs do not run from east to west. This arrangement gives the peninsula more geographical unity, and different sections depend upon land routes rather than upon ships and the sea. Although the Alpine highlands of the north acted as a protection against enemies, they discouraged commerce. In this favorable location which combined such advantageous natural features, the early population of Italy developed frontier qualities of courage, patience, hardihood, and practical intelligence.

Since the Italian peninsula extends through several degrees of latitude, and since there are fertile plains and high mountain masses, a great variety and diversity of climate exists. In the north and on the upper slopes of the mountains, we find a temperate climate and the products of central Europe; in the south, the climate is subtropical, with a vegetation much like that of Africa. This diversity in natural products permitted all-round growth, and formed the natural basis for national prosperity. The natural resources of the locality consisted of such useful products as stone, copper, timber, fruit, and grains. The fertile soil and favorable climate, combined with a strategic location for commerce, favored the early accumulation of a surplus and the development of a powerful civilization.

The common cause and federation. Since the early inhabitants of Rome enjoyed no natural protective barriers like those of Greece, but were easily accessible from east, south, and west, some form of union was necessary if the community was to survive. The people of early Rome lived on an open plain, exposed to the warlike raids of the fierce mountaineers of central Italy and the aggressions of the Etruscans of the north. These Latin tribes were driven, therefore, to gain by treaty and agreement a security not afforded by natural barriers. Almost at the beginning of her career, Rome adopted a policy of alliance with her neighbors for purposes of mutual security and protection. A league of thirty cities was formed to secure immunity from hostile invasion. Rome did not at first reduce her less powerful neighbors to complete submission. By treaties she bound each community or tribe to herself, yet kept them completely isolated one from the other. In this way the danger of combination against her was reduced. Each of the separate communities enjoyed a large degree of freedom in retaining its own customs and in enjoying commercial and social relations with Rome. In this way a secure political federation was built up, and Rome was able to maintain

and extend her military supremacy unhampered by troubles at home. During this early period Roman power rested not merely on a material but also upon a moral basis, for she had welded together under her leadership a group of unprotected peoples. This federation was able to stand secure against outside attack, to maintain internal law and order, and yet to allow a considerable degree of freedom of policy for each of the component units. Cunningham says, "These are exactly the conditions which afford the best opportunity for economic progress." [1]

Militarism and agriculture. Economic conditions, as well as physical surroundings and national traditions, inspired a policy of conquest and exploitation. The armies of Rome, unlike those of Carthage, were composed of citizen soldiers, not mercenaries. The consequent drain of army recruits from agricultural occupations seriously interfered with the cultivation of the soil. The military conquests of Rome brought captives of war for slavery. These slaves were utilized in such numbers to cultivate the land that their competition with the free peasant farmers became demoralizing and disastrous. Wealthy men obtained large landed estates in much the same fashion as they had in Greece. These holdings were cultivated by slave labor, chiefly utilized to produce luxuries for export. Cultivation of food crops was neglected, so that Rome was not self-supporting as regards her food, and resort was made to the importation of grain. In the Italian cities, particularly Rome, we find a congregation of idle men and women, just as we found at Athens. The city populace of Rome was fed with imported grain, sold at such low prices that the practice was ruinous to the yeoman farmer. He could not maintain himself and produce grain which would sell at less than the market price. Food production in the vicinity of Rome declined, and the city came to depend more and more upon an imported supply. New lands must needs be conquered to supply food by

[1] *Op. cit.*, p. 154.

importation, in the absence of an adequate domestic supply. Thus economic conditions, connected with policies of military expansion and exploitation, completed a vicious circle, and Rome became dependent upon conquests for food. Roman colonization was not impelled by ordinary motives of migration; it was rather one of the many governmental expedients for the progress of conquest and subjugation. Roman colonies were outposts which insured the extension of Roman domain by successive advances.[2]

2. The Class Struggle

The Romans were mostly a peasant folk living the frugal, simple life of small farmers on the fertile plains of the Tiber. This hard life inculcated the sterner virtues of bravery, courage, initiative, and practicality. A dignified family life bound the people together with austere religious ties. Although they enjoyed a considerable degree of personal independence, the people were divided into social classes. Those of noble birth, who could trace their family ancestry through many generations, held office as senators, magistrates, or priests. The great masses of the common people (plebeians), however, although personally free, could not hold office. The patricians alone were acquainted with the laws, and the plebeians were constantly at a disadvantage in business and social dealings because of their ignorance of legal rules. But the plebeians obtained a certain degree of legal protection through the relationship of patron and client. A plebeian chose a noble as his patron; then became the client. The patron gave his client legal advice in the conduct of his business; he brought suits for him, and defended him when sued. In return for this protection, the client became dependent upon the patron; it was his duty to follow him to war and support

[2] Cunningham, *op. cit.*, pp. 155, 156.

him in public life; he made him presents and labored in his fields.

Even in early times, the distinction between rich and poor was clearly marked. Common lands were held by the Roman state and let out to citizens as pasture land in return for a small rental. Territory gained by conquest was let out in a similar way. Since the wealthier nobles became the governing officials, they were inclined to take advantage of their privileges and seize more than their just share of the common lands. By this means the aristocrats gradually centralized the control of wealth in their own hands, and the common people became poorer. Exploitation of the people was carried so far that in time the term *patrician* came to signify aristocracy, or a large landowner, and *plebeian,* a small landowner, or landless man. But the plebeians did not submit tamely to this centralization of wealth. Through centuries of struggle they gradually gained rights of participation in determining the policies of the government. Thus internal Roman history is largely a story of class struggle.

In kingly times, the assembly of the people was consulted before war was declared or radical changes in the public policy adopted, but at length a new popular assembly developed. For some years the assembly had been organized in accordance with a military system which divided the people into classes based upon property qualifications. During the early republic, this military grouping of the people was gradually substituted as a voting assembly for the old assembly of curiæ. Thus it came about that the more property a man possessed, the greater was his political influence.

Debt-slavery and social revolution. The common people did not gain by the overthrow of the monarchy in the later period of kingship, for the kings had usually protected the people from the oppression of the powerful nobles. There was a movement among the aristocracy to reduce their clients to a condition of slavery. The nobles

looked upon unpaid rent as a debt, bearing interest. Peasants who were in arrears became deeply indebted to the nobles. Creditors frequently seized a delinquent debtor and held him as a slave until he had worked off the debt by labor. He might even be sold into real servitude to foreigners. Debtors were sometimes put into private prisons and tortured, that their friends might be influenced to redeem them. These intolerable conditions led the people to revolt. The whole plebeian army deserted the city and marched off to the sacred mount, threatening to found a new city. The governing body or senate was left helpless without the plebeian army, with no one to make shoes, to make wine jars or to do the carpentry. This "general strike" succeeded in bringing the nobles to terms, and, by an agreement drawn up on the sacred mount in 493 B. C., the common people were to have two annual officers of their own, called "tribunes," whose duty it was to protect all poor citizens unjustly treated. It was also provided that the person of the tribune was to be considered sacred, so that any one who injured a tribune or hindered him in his duties might legally be slain. The tribunes were assisted by two other officers, called ædiles. Under the protection of the tribunes, the common people continued their old popular assembly, and passed resolutions which were binding only upon themselves.

Jealous of the new rights of the commons, the nobles intrigued to diminish popular power and to impede the common business. Many of their clients, although landless men, had political influence. To destroy the influence of this hostile class, a law was passed through the senate and military assemblies which provided that the plebeian assembly should vote by tribes; that is, each of the twenty-one tribes was to cast a single vote. This measure excluded landless men from the plebeian assembly, because only landowners were enrolled in the tribes, and the new assembly so formed was called *comitia tributa.*

The writing of the laws. During all this period of struggle, the laws had remained unwritten. Oral tradition was handed down from father to son in noble families who used their exclusive knowledge of the law to benefit and oppress the common people, much as the Greek nobles had done. Under these conditions, no plebeian could quote the law as a proof of the injustice he had suffered. To improve the condition of the common people, the tribunes began to urge the codification of the laws. Fortunately this reform was encouraged by one of the nobles, Appius Claudius. Under his influence, the tribunes and the senate agreed to permit a codification of the law. Upon the report of a committee sent to examine the codes of law of Greek states, the assembly of the centuries elected ten men—decemviri—empowered to write the laws. This important concession was obtained in 452 B. C., when the Roman domain was upwards of 400 square miles, occupied by a population of not more than 150,000. Plebeians were really eligible to the new board, but the nobles, holding the power in their hands, filled it with patricians. The commission held office for one year, but failed to complete the writing of the laws. A new board was therefore elected for the following year. Upon this board the common people secured representation, for Claudius and at least three plebeians were members. The new commission inaugurated a liberal policy during its period of governmental control. But, by its efforts to promote manufacturing and commerce, it so angered the ignorant peasants and offended the conservative patricians, that the senate refused to approve the two tables of law engraved during this second year. Nevertheless, Claudius and his colleagues, desiring to secure the ratification of their liberal measures, determined to remain in office. Thereupon their enemies and certain popular demagogues accused them of acting as tyrants, and of attempting to maintain themselves in power for life. Influenced by these demagogues, the plebeians again called a "general strike,"

and seceded to the sacred mount. This action gave the senate an excuse to make short work of the board of decemvirs. Some of them were thrown into prison, others were exiled from the state. The laws were finally ratified in 449 B. C. They equalized the private rights of all, and, among other things, sought to curb usury by the provision that no man should take more interest for money than one per cent a month. If he broke the law, he was to be fined four times the sum.

The same consuls that secured the ratification of the twelve tables of the law were favorably inclined toward the lower classes, and succeeded in passing additional legislation in their favor. Prior to 449 B. C., the resolutions of the assembly of the tribes were binding only on plebeians. The consent of the senate was finally secured, so that the resolutions of the assembly of tribes were thereafter binding upon the whole people. This was a great gain for the common people, because it enabled them to share in guiding the policies of the state. About this time the tribunes obtained the power of veto over acts which were passed by the senate. Should the senate or magistrates ignore the veto of the tribunes, these representatives of the common people were free to obstruct the administration and enforcement of the new measure. Thus for more than a century the class struggle persisted, until, by 287 B. C., the plebeians acquired undisputed right to veto all measures of magistrates, senate, and assemblies.

For centuries intermarriage between the social classes was prohibited, but, in 445 B. C., plebeians were allowed to enter into legal marriage relations with patricians. This new concession gave greater power to the wealthy and influential plebeians. Some years later (444–367 B. C.), as a consequence of the removal of this marriage restriction, the patricians admitted plebeians to hold office. In place of the consuls, two military tribunes or consular tribunes were elected for the year, and both patricians and plebe-

ians were eligible for this office. The new law did not, however, give the plebeians the power which they sought, because the plebeians' candidates were usually defeated for office. Moreover, the shrewd noble families, who had been in power for generations, knew how to maintain themselves against strong democratic opposition by indirection and intrigue. When the danger point of any democratic wave was reached, they were always ready to divert the public mind by new and striking military successes, and constantly depended upon the power of patronage to undermine genuine popular reform.[3]

Public land and agrarian reforms. The public land which Rome acquired in the course of her conquests was disposed of in various ways. Some of it was immediately granted to settlers, a second portion was leased, a third portion sold, but by far the larger part remained unsurveyed. It was customary to allow all who wished to occupy this last part of the land simply on condition that they pay to the government a tenth of the grain and a fifth of the fruit produced thereon each year. In case flocks and herds of domestic animals were pastured on these lands, the state required a share of the animals, both oxen and sheep. But the debt-oppressed plebeians were dissatisfied with this last method of disposition, since patricians and wealthy plebeians were the only ones who really occupied sections of the unsurveyed land. After occupation, these classes were accustomed to buy, sell, and bequeath the land, so that they came to regard it as their own property. More than this, a rich landowner would sometimes eject the poor peasants who were his neighbors from their small adjoining farms, and annex their lands to his estate.

To put an end to this injustice and make the poor less dissatisfied with their condition, the tribune Licinius proposed an agrarian reform bill. This bill eventually became

[3] Ferrero, G., *Greatness and Decline of Rome*, vol. i. *The Empire Builders*, New York, 1909, Zimmern's transl., p. 13.

a law in 367 B. C. The provisions of this law, which dealt more immediately with the welfare of the people and the agricultural problem, are as follows: (1) No more consular tribunes were to be elected, but one of the two consuls must ever afterwards be a plebeian; (2) All the interest that had already been paid on debts was to be deducted from the principal amount still owed, the balance of the debt to be paid in three equal annual instalments; (3) No person must occupy more than 500 jugera of public land (a jugerum was about two thirds the size of our acre); (4) Upon the public land, no one person should pasture more than 100 cattle, or 500 sheep.

As patricians had enjoyed uncontested power for so many generations, they were much averse to the first clause of this law. Consequently the senate would not permit the first provision of the law to go into effect until the people had consented to the creation of three new patrician magistrates: a prætor, whose duty was to act as judge in civil cases, and two curule ædiles to act as supervisors of streets, public buildings and public games. From this time on, the leaders of the plebs made continuous advances in their struggle to obtain office. The effect of these gains was the growth of two new political parties: the nobles and their descendants, who were office-holders; and all other citizens, who were commons. These were to take the place of the old classes, the patricians and the plebeians. Unfortunately, that clause of the Licinian law which dealt with debt proved to be but a superficial remedy for the popular distress which existed, since it was merely alleviative and did not remove the causes of poverty.

Exploitation of the provinces. Rome's early policies of expansion were not followed in the latter days of the republic, nor during the period of the empire. In the early days, it will be remembered, Rome showed the utmost consideration for the communities which she had conquered, but, as she expanded over the peninsula of Italy and be-

came a world power, the new domains did not enjoy the same privileges and immunities which members of the old Latin league had possessed.

The new lands known as Roman provinces enjoyed peace, but Rome always favored her own citizens at the expense of the local inhabitants. Greedy money-lenders, speculators, and traders poured from the capital over into the provincial districts, and unjustly acquired much of the property in the subject countries. Their Roman citizenship protected them in the use of harsh methods, and they speedily reduced the people to destitution and poverty. These Roman capitalists acquired large tracts of land which were built up into vast estates cultivated by slaves. The *publicani* undertook to carry out the great government contracts for Roman roads. Money for new enterprises was borrowed from associations of money-lenders in Rome. The shareholders in these associations lived at the Imperial City. They were remote from the provinces, unfamiliar with the work and industry of these regions, and cared chiefly for the size of their dividends. They knew nothing about, or were careless of, the great abuses that existed in the mines and public works in which their money was invested.

The growth of plutocracy. The system of taxation was most unjust because taxes were farmed out. At an auction, the privilege of collecting taxes was sold to the highest bidder. To reimburse himself and meet his contract with the government, the tax collector compelled the inhabitants of the provinces to pay many times their due. The evil of unjust taxation was, no doubt, partly due to the short term of office which the officials enjoyed. The rapid change of office without pay made it necessary for the governor of a province to make as much money as he could while in power. It is said that he expected to make three fortunes; the first, to pay the debts which he had contracted by bribing his way to power; the second, to defend himself in case of legal prosecution on his return to Rome; and the

third, to enable him to live in luxury for the remainder of his days. The courts which tried cases of extortion committed in the provinces were so corrupt that little reform could be accomplished. In fact, it may be said that thieves and plunderers sat in judgment over their fellows. In accordance with this vicious system, time brought simply an exchange of places, the judges becoming actual thieves and plunderers again, while the former culprits were elevated to the seat of justice. The provinces really had no protection from this sort of injustice. Large areas fell out of cultivation because of the rapacity of tax collectors, and even towns fell into premature decay. But exploitation and waste were not confined to the provinces. Italy also experienced a decline. The Italian communities which had aided Hannibal after the battle of Cannæ were reconquered, and their citizens reduced to slavery. From a condition of aliens, they were degraded to that of state serfs, and large tracts of their land were confiscated by Rome.

After the Second Punic War (201 B. C.), the character and ability of the noble classes declined. They kept the higher offices of the state for themselves and passed them around in rotation to members of their privileged circle, forming a sort of hereditary caste. It was customary for a young noble to enrich himself as a provincial quæstor after serving as an officer in the army. As an official, he must entertain the populace with expensive religious festivals and shows to gain their favor and secure their votes for still higher offices. It was hardly necessary, under such a system as this, to resort to open bribery. At length he was advanced to the prætorship, and afterwards to the consulship. As the governor of a province he obtained much spoil, and the autocratic powers which he possessed made him brutal and haughty. He might even be elected to the censorship if his popularity was sufficiently established among the people. These nobles were more than aristocrats; they were great capitalists who sought to hold the wealth of the

world. Thus Rome was governed by a selfish plutocracy which sought to gain governmental power in order to secure more wealth.

The important body of governmental control still remained the senate, but the senate had increased its power at the expense of magistrates and popular assemblies. The members of the senate were men of considerable influence and experience; they had held high offices at home, served as commanders of the Roman armies, represented Rome as ambassadors to foreign states, and had held other important offices. Since they usually held their positions for life, they looked forward to a continuation of their power. In accordance with the constitution, all Roman citizens might rightfully attend the assemblies. Yet distance from Rome prevented many persons from attending, and these assemblies were composed chiefly of those who lived in or near the city. Although a member of the assembly could vote for or against any candidates or measures proposed by the presiding officer, new measures were initiated only by the magistrates. This state of affairs made it a simple matter for these officials to gain control of the assemblies, and the masses of the people really had very little power over legislation.

Demoralization of the yeoman farmers. The rural middle class suffered severe deprivations at the hands of this greedy plutocracy. After the Second Punic War, an increasing number of slaves were brought into the market and sold to capitalists, who used them to cultivate lands and tend the herds on their estates. Thus the slaves gradually took the place of freemen upon many of the old family estates, and in large country districts the free rural population became practically extinct. The small holdings of the free peasantry were thrown together into large domains (*latifundia*) which were managed by bailiffs and worked by slaves who were often chained together in gangs. Thus at the basis of Roman society there was a great servile pop-

ulation—inefficient, wasteful, sullen, and degraded. Appian says of this condition: "The nobles became enormously rich and, while the race of slaves multiplied throughout the country, the Italians dwindled in numbers and in strength, oppressed by penury, taxes, and military service."[4] The few free peasants who continued to carry on the unequal struggle in the country were subjected to the degrading example of low-grade work and low standards of living among the slaves with whom they had to compete. The demoralizing influences of slavery were not alone confined to the country; they were found also in the city. At Rome, corporations of wealthy nobles carried on industrial work based mainly upon the labor of slaves and the business ability of freemen. Slavery was a massive brutal, industrial force. Since slaves were cheap and performed the simpler mechanical tasks, there was no economic motive for making the slave live long. As a rule, therefore, the master treated his slaves with great cruelty; for small offenses they were whipped, tortured, or even crucified.

The middle class was subjected to other demoralizing influences besides slavery. We have already mentioned the unjust taxation of the provinces, which resulted in systematic exploitation of free labor. But another activity of the government was also effective in ruining the yeomen. This consisted in the artificial price regulation of grain, in order that there might be a large supply of cheap food for the idle citizens of Rome.

3. Agrarian Conditions and the Problem of the City

The population of Rome was largely made up of an idle and menacing element. Old soldiers returning from the wars, finding their lands confiscated by the nobles, or having lost the inclination for honest toil, became dependent for their support upon public and private charity. The ruin

[4] *Civil Wars*, 1, 7.

of agriculture throughout Italy had driven thousands of poor peasants into the city where they could find little work. Small farmers had been ejected forcibly from their lands, or had become so indebted that they gave up the unequal struggle with cheap slave labor and migrated to Rome. The urban proletariat crowded into cheaply-built wooden lodging-houses, and were obliged to pay high rentals for even a single room. These tenements, sometimes from sixty to seventy feet high, were managed and sublet by freemen, or lessees, to laborers and small tradesmen.[5] The slums of Rome had narrow and crooked streets. Many of the tenements had tottering walls, and there was the constant danger of falling houses. Sanitation and drainage were very poor. Many of the dependents became clients of rich families, habitually looked to the beneficence of these nobles for their living, or turned from honest livelihood to begging or robbery. But it should be remembered that these people were citizens, and hence had the right to vote in the great public assemblies held at Rome. By virtue of this right, they constituted a political factor. Crowds of beggar clients attended a noble and voted for him in return for the loaves of bread and food which he gave them. The expensive popular amusements which the nobles provided added to their following among the city rabble. This demoralized populace took wild delight in gladiatorial shows at which there was much rending of flesh and spilling of blood. The population was also swollen by many aliens who flocked to Rome in search of adventure, or in expectation of being supported. Thus the masses in Rome became a rabble—excitable, emotional, or sullen as the mood took them—and, while constituting an ignorant and dangerous mob which menaced the peace of the state, nevertheless, because of their votes, formed a more or less powerful political factor.

Agrarian reform of Tiberius Gracchus. At length the con-

[5] Ferrero, *op. cit.*, pp. 27–28.

dition of the masses became such a menace to the welfare of Rome that certain changes became inevitable. Reform could not well come from the senate, for, as the historian Greenidge remarks: "Social conservatism was entrenched behind a political rampart. . . ."[6] At this crisis in the life of the nation, a young man of plebeian ancestry though of noble family, Tiberius Gracchus, came into political prominence. It so happened that his official duties had taken him over a portion of rural Italy in which the magnitude of exploitation wrought by unscrupulous capitalists was most evident. Tiberius was deeply moved by what he saw, and his desire to reform the evil state of affairs was further stimulated by plaintive scraps of anonymous writing appearing on the smooth surfaces of monuments, walls, and porches—entreaties for aid to force the public land to be given to the poor. In a public harangue, he thus described the condition of the people: "The beasts that prowl about Italy have holes and lurking-places where they may make their beds. You who fight and die for Italy enjoy but the blessings of air and light. These alone are your heritage. Homeless, unsettled, you wander to and fro with your wives and children. Our generals are in the habit of inspiring their soldiers to combat by exhorting them to repel the enemy in defense of their tombs and ancestral shrines. The appeal is idle and false. You cannot point to a paternal altar; you have no ancestral tomb. No! You fight and die to give wealth and luxury to others. You are called the masters of the world; yet there is no clod of earth you can call your own."[7] Surely a dismal picture of the change wrought in Roman society since the early period when Roman citizens had been landowning and thrifty farmers!

As tribune in the year 133 B. C., Tiberius proposed to enforce a land bill similar to the agrarian law of Licinius,

[6] Greenidge, A. H. J., *History of Rome, B. C. 133–104*, London, 1905, vol. i, p. 105.

[7] Plutarch. *Tiberius Gracchus*, p. 9.

which had never been seriously obeyed.[8] The object of this new bill was to reclaim the public land from its present private occupiers and distribute it among needy citizens, so that, by one bold move, the problem of poverty would be solved, and at the same time the agrarian situation would be reformed by bringing the land under cultivation by citizens on small holdings.

All this was to be accomplished by the several provisions of the measure. In the first place, those portions of the Licinian law which stated that no person should use more than 500 acres of public land, or pasture more than 100 cattle or 500 sheep on public land, were reaffirmed. He next introduced a provision, taken from a law passed after the time of Licinius, which required that a certain portion of the laborers on any farm should be freemen. Sons of the present occupiers of the land might each hold 250 acres of land up to a maximum of 500 acres among all the sons of a given family. Any land not thus disposed of was to be divided among the poor in lots of about thirty acres. These latter allotments were to be heritable and granted upon perfectly secure tenure, but they were to be inalienable, and the settlers were to pay a small rental to the state for their use. Tiberius hoped to make this law effective by the provision that a commission of three, chosen annually by the people in their tribal assembly, should make the division. In these respects the bill appears to put in legislative form some of the principles which Aristotle urged as fundamental guides for the remedy of poverty in Greece. Considering the bill in the light of the existing conditions, it appears to have been a bold effort to strike at the economic causes of poverty and social degeneration. It was to furnish the poor with an opportunity to earn an honest livelihood and allow them to become self-respecting and responsible citizens. The land-hunger of the capitalist was to be checked by the inalienability clause. Moreover, the army

[8] Appian, *Civil Wars*, i, 9; Plutarch, *Tiberius Gracchus*, p. 8.

was also strengthened by the bill, for the number of citizens qualified to serve as soldiers was increased.

Such a socialistic scheme as this land redistribution plan could not have been made a law without stiff opposition from the landed interests, in spite of the provision it contained to pay monetary compensation for the land surrendered.[9] It must have appeared like confiscation to many who had lost the memory that their holdings had once been public land. Ancestral homes and tombs were scattered over different parts of a large owner's domain, and in the redistribution, his sacred possessions would, like as not, go to strangers. The *peculia* of sons and dowries of daughters were often in land, and all these property relations would be destroyed. Capital invested in improvements by thrifty persons might go to unknown settlers. Tenure had seemed so stable a thing that it had been accepted as security for debt. Thus a variety of interests united to oppose the redivision scheme. The wealthy landlord classes had never before experienced such a danger to their accustomed habits of buying, selling, and bequeathing the land that really belonged to the Roman people.

Ferrero points out that, at the time Tiberius's bill was brought forward, Italian cultivators were just beginning to adopt more efficient methods, and the land laws threatened to throw this transition stage into still greater disorder.[10]

On the other hand, the bill was supported by the peasant and small landholding classes; by clients, freemen, artisans, and a few social-minded conservatives.[11]

The opposition chose the tribune Marcus Octavius, a large landholder on the public domain, although a personal friend of Gracchus and a man of great dignity of character, to oppose the land bill. A series of spirited debates on

[9] Plutarch, *Tiberius Gracchus*, p. 9.
[10] *Op. cit.*, vol. i, p. 55.
[11] *Ibid.*

the merits of the plan were held in the presence of the people. Yet the eloquence of Tiberius failed to prevail against the decision of Octavius, which led him to veto the bill at the close of the debates. In desperation, Gracchus tried to force the issue by an edict which practically tied up all official activity until the voting on the agrarian law should pass the measure. At this juncture, an appeal taken to the senate resulted in overwhelming criticism of the bill, and Tiberius, with mind set upon enacting his plan into law, resorted to the extreme measure of suggesting the deposition of Octavius from the tribunate. After dramatic scenes between the two representatives of the people, Octavius was removed from office and the bill became law.

In accordance with Roman law, the assembly of the people, which had just deposed a tribune during his year of office, was supreme; actually, they enjoyed little power. In the light of past practice, the aristocratic governing body of Rome—the senate—declared the act unconstitutional. Shortly after the bill became a law, the popular election to the land commission which was to administer it of Tiberius Gracchus, his father-in-law Appius Claudius, and his younger brother Gaius Gracchus, gave the opposition new cause for criticism, and they openly accused Tiberius of aspiring to a tyranny. As a matter of fact, the commission was really in the hands of a family clique, but, as Greenidge remarks, "it was perhaps natural for the people to put faith in the family of a champion." [12]

The senate showed its resentment by refusing to appropriate sufficient money to enforce the new law. Tiberius was thus faced with the problem of trying to benefit the poor by furnishing them land without the means of sowing, or cultivating it, or of utilizing it for pasturage. At this juncture, it so happened that the Roman people became unexpected heirs to the estate of Attalus the Third, king of

[12] Ferrero, *op. cit.*, p. 127.

Pergamon. Thereupon Tiberius announced his intention to take the money left by the king, and use it to establish upon their lands the poor settlers provided for in his agrarian law.[13] As this was a proposal which would, in its practice, usurp the financial rights of the senate, Gracchus was from this time on even more bitterly attacked by representatives of the landlord and aristocratic classes. But he sought to make good use of the short time that remained before the next election, by increasing his constituency among the urban classes. Meanwhile the opposition waxed stronger and more daring. At length election day came and, fortunately for the landed interests, it occurred at harvest time when the majority of Gracchus's rural supporters were absent. A riot was started by the hostile senators, and Tiberius Gracchus and 300 of his followers were slain. This was the first time in the class struggle that a Roman mob had shed blood in civic discord. But the leaders of this revolution were senators, men who had grown accustomed to policies of treachery and oppression in the provinces. It was natural for them to take one step more and resort to violence, in order to crush a political foe at home. But the use of force was a dangerous precedent for the senate to establish, as these treacherous acts provoked a social revolution which was to last 100 years.

With the death of Tiberius Gracchus, the keenness of the political opposition to his reforms vanished. The people were allowed, year after year, to perpetuate a land commission favorable to their interests. The officials carried on their work with energy. Between 131 and 125 B. C., the register showed an increase of upwards of 75,000,[14] a considerable proportion of whom must have been among the small landholding class, and attributable to the successful working of the new agrarian schemes.[15] Yet the land

[13] Livy, *Epistles*, lviii.
[14] Greenidge, *op. cit.*, pp. 145–150.
[15] Mommsen, *The History of Rome*, bk. iv, ch. iii.

commission met with many difficulties. Old titles had been lost, and the right of state ownership was often difficult to prove because no historical record survived to show where the assignment had ended and the permission of occupation begun. In the effort to secure good farm land for the needy settlers, it was inevitable that some injustice should be done, and original occupiers occasionally found themselves in receipt of swamp or barren land in exchange for their former well-kept tracts.

The Latins and their allies, together with other interests that had suffered under the commission's policies of land distribution, appealed to Scipio Æmilianus for aid. Scipio was a stern soldier, one of the few surviving examples of all that was dignified and fine in ancient Roman character. He looked with disfavor upon the political activity of his late kinsman, Tiberius Gracchus, as evidence of lack of reverence for the Roman constitution. He suggested that when public and private ownership of land was in dispute, decision should be entrusted to the consuls. This idea was embodied in a new law, and the commissioners were thus shorn of their power, the land law becoming a dead letter. Immediately the feeling spread among the masses of claimants under the old land law that they had been betrayed. Scipio was charged with ingratitude and bitterly attacked in public harangues. One morning he was found dead in bed, with no marks of violence on his person. Thus ended the career of an illustrious Roman, representative of all that remained good and noble in the aristocracy of the metropolis, but an unyielding conservative in social reform.

Social legislation of Gaius Gracchus. For nine years the Roman people had waited in expectation of social reform. The remedies projected by the great popular leader Tiberius Gracchus had either been nullified by the intrigues of the vested interests, or had proven inadequate to meet the complex situation. The masses needed a new champion for their cause. When things looked darkest, the younger

brother of Tiberius, Gaius Gracchus, assumed the rôle of leader. Gaius had all the sincerity of purpose possessed by his brother, but combined with it greater natural gifts. He seems to have possessed extraordinary emotional and intellectual equipment for the task of social reform. He had a wide knowledge of humanity, great intellectual acumen, and convincing powers of oratory. His experience as one of the land commissioners under his brother's land law had given him practical appreciation of the interests involved and the difficulties to be met in social reform. In official service in the provinces he had won distinction and a reputation for justice in his dealings with subject peoples.

When the tribunican election of the year 123 B. C. drew near, the city swarmed with rural folk anxious to support Gaius Gracchus. In spite of the organized opposition of the conservatives, already quite aware of the young leader's rare ability and fearful of his power over the people, Gaius was elected tribune. The younger Gracchus realized the difficulties that his brother had met in his effort to reëndow 400,000 citizens of the metropolis with a new spirit by the simple device of an agrarian reform. On the one hand, he saw a powerful and utterly unscrupulous faction in the great public landlords; on the other, a mass of citizens with entire inability to sacrifice present comforts, even temporarily, in exchange for material future gain. As Ferrero says: "The nation was by this time simply a small and exclusive oligarchy of landlords and traders, bankers and concession-hunters, artisans, adventurers, and loafers; the metropolis was peopled with a noisy, unprincipled, and self-opinionated mob, thirsting for pleasure and excitement, for easy profits and quick returns." [16] An intelligent and far-sighted reformer has, in all probability, rarely been furnished such poor working material.

The corn law of Gaius Gracchus. Gracchus soon set him-

[16] *Op. cit.*, p. 57.

self to the difficult task of creating a solid constituency out of this most heterogeneous of peoples. He had observed that his brother, while supported by the rural element, had lacked a sufficiently powerful following among the city populace. The clientele of the rich had been built up by an extravagant largess which was entirely undiscriminating in its practice. The dependence of the metropolitan proletariat upon this sort of support was utterly demoralizing. For the benefit of the rabble, the rich provided gladiatorial shows and the state provided gorgeous triumphs. Gaius conceived the idea that a reliable urban constituency, to support his efforts at social reform, could be created in this well-known way. He may not have recognized the danger of the method, or he may have considered that the end would justify the means; at any rate, there were ancient precedents and apparently reasonable grounds for the plan. The Greek ideal of a class of leisured citizens supported by state payments had been put into practice, and must have been known to Gaius. For a long time the Roman government had been reaping large returns from its provinces, returns in which the proletariat had not shared. Moreover, something had already been done for the small landowning class in which the urban population had not shared to any great extent.

Gracchus, therefore, proposed to sell corn to Roman citizens every month at half price, that is, 6⅓ *asses* the *modius*.[17] Greenidge remarks that since such important details as what proportion the monthly quantity of grain, sold at this cheap rate, bore to the total amount required for the support of a family, whether the grain was restricted to the head of each house, or granted to adult sons, whether registered citizens alone, or casual applicants received the aid, are unknown, it is futile to draw final critical conclusions.[18] It is possible that a small and continuous loss on

[17] Plutarch, *Gaius Gracchus*, p. 5; also Appian, *Civil Wars*, i, 21.
[18] *Op. cit.*, p. 206.

corn would be less of a drain on the treasury than the usual spasmodic attempts to put low-priced grain upon the market in times of crisis. Moreover, it is conceivable that steady purchasing on the part of the state might induce competition that would somewhat reduce the normal market price.[19] From the modern point of view, the scheme may be unhesitatingly assailed because of its indiscriminate character. There was apparently no effort to inquire into the means or worthiness of recipients. This fundamental defect was, in the future, to transmute this law into the greatest single pauperizing influence in Roman history, for it degenerated into gratuitous distribution of corn, food, and clothing, and exhausted the state treasury. If he was unaware of the demoralizing effect of his plan, Gaius undoubtedly thought that the wholesale purchase of grain would be profitable to the landed interests, and the building of huge granaries at Rome would furnish work for contractors and laborers.[20]

Another reform which sought to benefit the citizen body as a whole, was a revival of Tiberius's land commission. Gaius's practical experience in the administration of the original law led him to make his new law a comprehensive statute which covered the field in considerable detail. It dealt with things as they existed rather than with new principles. There seemed to be no way of estimating the effectiveness of this new law.[21]

To extend his constituency among the more influential classes, Gracchus proposed bills which would reduce the legal monopoly of the senators and put legal power within reach of the capitalist class. Since the legal rights of the aristocratic element had long been a thorn in the side of the newly rich, this plan was calculated to foment strife between the two factions which had formerly united to crush

19 Greenidge, *op. cit.*, p. 206.
20 Appian, *Civil Wars*, i, 23.
21 Greenidge, *op. cit.*, p. 209.

his brother. Another bait to the capitalists was thrown out in the form of a proposal to let out to metropolitan financiers, rather than to the provincials, the taxing of the kingdom of Pergamus.[22] Two army measures, one to furnish free clothing to soldiers, the other setting a lower limit of seventeen years as the age of enlistment, were to accomplish a much needed reform and lay the basis for a more satisfied soldiery. All these proposals became law.

Constructive measures. Turning now from the legislative enactments which enabled Gaius to build up a more powerful constituency than his brother's, to his constructive reforms, we find that colonization schemes occupied the foremost place. By this time the food supply of Rome had become a grave problem. The new corn law had helped attract to the city artisans, traders, adventurers, and loafers. The problem of overpopulation could best be met by colonization. Gracchus also conceived of colonization as a remedy for industrial decline. According to Greenidge, "He did not view agrarian assignation as an alternative to colonization, but recognized that the industrial spirit might be awakened by new settlements on sites favorable to commerce, just as agricultural interest had been aroused by the planting of settlers on the desolated lands."[23] Gaius was the first reformer to suggest that colonization was the proper means of rehabilitating the better type of urban proletariat.[24] Considerable discrimination seems to have been exercised in the selection of his colonists, for the character of each applicant was investigated.[25] Two settlements were actually established during his second tribunate, while in his first tribunate a settlement of Carthage was proposed by his colleague, Rubrius. There were to be 6000 colonists divided into a superior and inferior class, the former to re-

[22] Ferrero, *op. cit.*, pp. 58–59.
[23] *Op. cit.*, p. 224.
[24] *Ibid.*
[25] Plutarch, *Gaius Gracchus*, p. 9.

ceive 200 *jugera* apiece,[26] with all allotments in absolute ownership. Gracchus and one of his friends were named among the triumvirs to establish this colony.

This scheme of settlement rounded out the young reformer's provision for his various protégés; it cared for the more enterprising and worthy of the urban proletariat as the corn law had provided for the city dregs and the agrarian commission had helped the sturdy farmer folk. But there were insurmountable obstacles to the success of the colonization scheme. The people who were asked to support the measure, and the beneficiaries of it, had their life interests centered in the metropolis where the continual largess of the nobles and lately the corn law of Gracchus had combined to make them averse to the initial hardships of a new settlement.

To complete the revival of commercial and industrial life in Italy, Gaius outlined and carried through a great road-building enterprise. Rapid and easy communication between towns and the capital, and between hamlets and towns, was secured by a series of cross-roads between the great military thoroughfares.[27] The measure also must have helped political centralization, since the representative character of the comitia would be increased by these improved facilities for reaching Rome. The expense was probably met in part by dues taken in at toll-gates. Repairs may have been provided for by requirements made upon the time of settlers on the land allotments.

The extraordinary application of Gracchus to the execution of these varied schemes made him the busiest and most conspicuous man in Rome. Plutarch says: "The people looked with amazement at the man himself, seeing him attended by crowds of building contractors, auditors, ambassadors, magistrates, soldiers, and learned men, to all of whom he was easy of access. While he maintained his dig-

[26] Mommsen, in *Corpus Inscriptionum Latinarum*, i, pp. 75 *et seq.*
[27] Plutarch, *Gaius Gracchus*, p. 6; Appian, *Civil Wars*, i, 23.

nity, he was affable to all, and adapted his behavior to every individual."[28] Gracchus had thus become a great benevolent "boss." But his very importance and consuming activity were interpreted by his enemies as evidence of a desire for greater personal power.

This power and popularity gave Gaius confidence in his own ability to carry through to successful solution a problem which had been the doom of other Roman statesmen. He proposed to grant full rights of citizenship to the Latins, and Latin rights to the other Italian allies. In support of his measure, Gaius appealed to the better nature of his followers. Yet this revolutionary plan furnished his opponents with the very opening they had waited for, and impetus was given to the forces of dissension among his heterogeneous following—forces only held in check by the political versatility of the great leader. It was suggested to the populace that enfranchisement of the Italians would crowd the urban proletariat out of the almost monopolistic position they so long had held in the enjoyment of public gatherings, games, and festivals. This cunning appeal to the selfish interests of the mob succeeded in alienating many of Gracchus's followers. The tribune Drusus threatened to impose his veto on the franchise bill, and this combination of circumstances effectively put an end to Gaius's plan. At this juncture, the opponents of social reform made use of the moderate statesman Drusus to advance a counter-colonization scheme calculated to supplant the far-sighted plan of Gracchus. From the point of view of popular support, Gaius's colonization plan was weak because it appealed to the interests of the middle class alone; moreover, scrutiny of the personal qualifications of prospective settlers was uncomfortable. The proposal of the opposition was the foundation of twelve colonies of 3000 settlers each, where emigrants were not to be excluded because of poverty, and where no rental would be required. The provisions

[28] *Gaius Gracchus*, p. 6.

of the new plan seemed generous, and the support it drew from Gracchus's followers was enlarged and strengthened by the senate's action to relieve all settlers on the Gracchian allotments of rent payments to the state.[29] Another competitive plan advanced by Drusus, with the support of the senate, was a law for the protection of the Latins. This was calculated to remove the abuses that Gaius's franchise law had proposed to overcome, but avoided the gift of franchise. These adroit policies of legal enactment effectively broke up the solidity of Gracchus's constituency.

When Gaius returned from a visit to his Carthaginian colony, during which he had personally superintended the enterprise, he found the people apathetic and cold. All his old-time eloquence failed to rouse them from their indifference—a state of mind attributable to satiety produced by the recent bounty of the senate. His last chance for a revival of power seemed to be in the creation of a solid party among the very poor. His success, however, appears to have been slight, for at the next tribunican election he was not returned to office. Thereupon his enemies sought to complete his downfall from popular power by a proposal to repeal his law for the colonization of Carthage.[30] After this event, matters moved rapidly. The rash activity of Gracchus's followers gave the senate the opportunity it had waited for, and a riot was precipitated in which Gaius Gracchus and many of his followers were slain.

The tragic deaths of the Gracchi elevated their memories among the people to almost godlike proportions, perhaps more than did their achievements during life. "The people, though humbled and depressed for a time, soon showed how deeply they felt the loss of the Gracchi. For they had statues of the two brothers made and set up in public places, and the spots on which they fell were de-

[29] Greenidge, *op. cit.*, pp. 241–242.

[30] For an account of the reactionary legislation which followed the death of Gaius Gracchus, see Ferrero, *op. cit.*, pp. 68–70.

cleared sacred ground, to which the people brought all the first fruits of the seasons, and offered sacrifices there and worshipped just as at the temples of the gods." [31]

The Gracchian reforms in perspective. The Gracchi lived and labored at a period in the history of Rome when social and political questions were interwoven with unusual closeness. For example, the land question had its economic, social, and political aspects. The rejuvenation of the masses could be promoted by a return to the land. Such a redistribution of population might be expected to relieve the problem of poverty of the city, stimulate agricultural industry, and at the same time build up a sturdy yeoman class whose political significance might be considerable. But the farmer would not always be capable of exercising his political function of voting, for he might often be far distant from the capital and seed-time and harvest duties would be imperative. These last duties so signally interfered with Tiberius's political support among the country voters that his promising career came to a disastrous end, while Gaius concluded that an urban following was the best security of a Roman reformer.

Two conditions appear to have been fatal to the small landholder: the cheapness of slave labor, and cheap grain from the provinces. Modern economists might conceive of two remedies for these conditions: a tax on agricultural slaves, and an import duty on grain. But at the time of the Gracchi, it is doubtful whether the slave market was ever sufficiently well organized to permit discriminative taxation. The other device could not have been enforced, because it was necessary to have low-priced grain for the city populace. Already, foreign grain undersold the Italian product,[32] and the consequent unprofitableness of grain-growing aided the tendency toward land accumulation.

But economic conditions, however modified by social

[31] Plutarch, *Gaius Gracchus*, p. 18.
[32] Greenidge, *op. cit.*, p. 268.

legislation, were not alone responsible for social decay. What was needed was a new spirit among the working classes. The attractions of the great metropolis exercised a constant lure, drawing population from the soil and then demoralizing it with luxuries and feverish atmosphere. The stern national psychology that feared neither hard work nor privation, a state of mind which is the product of simple dependence on nature and a continual struggle to gain the ascendancy over her rougher forces, had disappeared. Changed economic conditions and social relations, although casual factors in this transformation, could not be restored to their earlier arrangement by a spasmodic outburst of social legislation. Even had this been possible, the normal evolution of popular psychology, that secures as its end the adaptation of a people's mind to the basic factors in their national economy, is so slow and leisurely that generations would have had to pass before the old spirit could be restored. Thus a survey of the legislative successes and failures of the Gracchi viewed in the light of social evolution only helps to deepen the conviction that preventive legislation which seeks to direct the channels of national character is preferable to remedial measures which are necessarily superficial.

The colonization scheme, probably intended to rehabilitate the commercial and industrial classes, penetrated to the very core of the social problem, for the displaced yeoman farmers did not transfer their energies to commerce and industry, but drifted into the idle habits of the metropolitan rabble. If interest in commerce and industry could have been revived by the establishment of new centers of activity, then the national ruin threatened by such a sinister combination of circumstances as agrarian depression and commercial and industrial decline might have been averted. But it was not to be, for such reforms needed the political support of the capitalistic class, whose monopolistic self-interests were directly opposed to any effort which might

revive the fortunes of their competitors, the traders of moderate means.

The historical importance of the social program of Gaius Gracchus is emphasized by Greenidge when he says: "The items of reform, as embodied in his legislation, became the constant factors in every democratic program which was to be issued in the future. In these we see the demand for land, for colonial assignations, for transmarine settlements, for a renewal or extension of the corn law, perpetually recurring." [33]

Public relief in Rome. Let us confine our study to a brief outline of later develópments that followed in the wake of Gaius's *lex frumentaria.* However uncertain our knowledge of provisions for its discriminate administration, there is certainly no doubt of the essentially lax execution of later modifications of the law. The *lex frumentaria* was followed by the *lex Octavia,* which restricted the monthly sale to citizens settled in Rome to five *modii* (1¼ bushels). This allowance appears practically to have been a maintenance, since Polybius informs us that the support of the slave and soldier, respectively, was five and four *modii* a month. In 58 B. C. the *lex Clodia* made corn free to the *plebs urbana.* By 5 B. C. this policy of state-promoted pauperization had reached such proportions that 320,000 persons were in receipt of corn. Cæsar reduced the number to 150,000, but by Augustus's time a maximum of perhaps 320,000 had again been reached. The lists of recipients in Cæsar's time were probably settled by lot,[34] and the enormous figure given was, likely as not, considerably reduced by a property test and some kind of scrutiny.[35] The distribution of grain was systematized by publishing the names of certified recipients, and by providing identification tickets. During the republic, corn or bread was distributed at the temple of

[33] *Op. cit.,* p. 277.
[34] Suetonius, *Cæsar,* p. 41.
[35] Loch, *op. cit.,* p. 95.

Ceres, and later the practice was continued at certain steps in each of the fourteen wards of Rome. By the middle of the second century, wheaten loaves were baked for the people in state bakeries, and given out several times a week. "In Aurelian's time (A. D. 270) the flour was of the best, and the weight of the loaf (one *uncia*) was doubled. To the gifts of bread were added pork, oil, and possibly wine, clothes, also white tunics with long sleeves, were distributed. In the period after Constantine (d. 337, of Theod. *Code,* xiv, 15) three classes received bread; the palace people (*palatini*), soldiers (*militares*), and the populace (*populares*)." [36]

These commodities were distributed at the proper steps of each class of recipients in the several wards. Stale loaves might be exchanged in accordance with regular provisions. Severe penalties against misappropriation were provided, designed to limit the application of the law to the needy proletariate, and aiming to discourage dependence on the part of richer classes. Only citizens could receive this relief, and the right became hereditary. At the time of the founding of Constantinople, right to relief was attached to new houses, that building operations might be encouraged. Thus attached to property, the right to relief was acquired by the purchaser (*aedes sequantur annonae*). The consequence of this indiscriminate civic bounty was the creation of a body of poor citizens who were accustomed to throw themselves flat on public charity. This dole-giving practice spread from Rome, and was introduced into Constantinople, Alexandria, and Antioch with demoralizing results.[37]

The baleful results of dole-giving may be traced through the period of the empire.[38] A natural outgrowth of the

[36] Loch, *op. cit.*, p. 96.

[37] *Ibid.*, pp. 97–98.

[38] Davis, W. S. (*Influence of Wealth in Imperial Rome*, p. 195) estimates the population of Rome at the time of the fall of the republic as over one million. This seems reasonable, since other estimates vary from 870,000 to eight million.

vicious system was the obligation of the hardworking to maintain an increasing number of idlers. Suetonius has given us a picture of the degree to which this practice had become intrenched by the time of Augustus. "Once at the time of a great failure of crops, when it was difficult to provide relief, Augustus ordered expulsion from the city of slaves who were exposed for sale, of schools of fencing-masters, and all foreign residents, except physicians and teachers, and, above all, of domestic slaves, so that at last the supply of corn became cheaper. At that time, he wrote that he was inclined to abolish forever the public distribution of corn, for the people had come to rely upon it and ceased to till the fields; but he had not proceeded further in the matter because he was sure that, from a desire to please the people, it would be revived at one time or another. After that time, he managed so that as much consideration was given to farmers and traders as to the multitude." [39]

In the early years of the first century, the people raised such a complaint against the high price of corn that Tiberius (14–37 A. D.) fixed the retail price, and compensated the traders with a promise to add two *sesterces* (4 cents) on every peck sold.[40] Later, in 37–41 A. D., Caligula distributed 300 *sesterces* [41] per capita to the people at two different times. It was during a period of scarcity that the mob attacked Claudius (41–54 A. D.) and threw bread at him. To avoid a recurrence of this indignity, Claudius adopted every means to ensure the continuous importation of food throughout the winter months, and even agreed to indemnify corn merchants who suffered loss by storm.[42]

[39] Suetonius, *Augustus*, 42.

[40] Tacitus, *Annals*, ii, 87, of xv, 18; Church and Broddrib's trans.

[41] Davis, *op. cit.*, p. 11, assigns the following value to Roman coins during the empire: sesterce = 4 cents; denarius = 16 cents; and talent, about $1.000,000.

[42] Suetonius, *Claudius*, 18, 21.

Vespasian (69–79 A. D.), whose liberality to all classes of the people was extreme, was obliged to refuse a mechanical invention for moving immense columns into the capital because he feared that the labor-saving device would take employment from the populace, whose maintenance he had assumed. Thus the dole-giving had been carried to such lengths that inventive ability, outside the ranks of its demoralized beneficiaries, was discouraged. Loch comments upon the dole-giving thus: "In amount, the Roman dole seems to have been equivalent to the allowance provided for a slave, but the citizen received it without having to do any labor task. He received it as a statutory right. There could hardly be a more effective method for degrading his manhood and denaturalizing his family. He was also a voter, and the alms appealed to his weakness and indolence; and the fear of displeasing him and losing his vote kept him, socially, master of the situation." [43]

Pliny [44] refers to a plan for the relief of children of citizens which developed as private charity and afterwards became imperial bounty. It evidently helped to supplement the practice of dole-giving. Nerva and Trajan made use of it. Special relief was granted to children whose names appeared on the relief tables at Rome. At Velia and Beneventum, instances of relief are recorded in inscriptions. It appears that the emperor lent money at the low rate of 2½ or 5 per cent. In the former place, the loan amounted to 1,044,000 *sesterces*. Security for the debt was provided by 51 local landowners who mortgaged holdings valued at 13 or 14 million *sesterces*. Some 300 children were aided out of the interest upon the emperor's money paid into the municipal treasury. The administration of the fund was under the local management of *quaestores alimentarii*, and high officials acted as patrons. The emperors Antonius Pius (A. D. 138), Marcus Aurelius (A. D. 160), and Severus (A. D.

[43] *Op. cit.*, p. 99.
[44] *Epistles*, vii, 18.

192) established these funds in the names of their wives. By the third century, the system fell into disuse.[45]

Private charity and benevolence. Corresponding to the dole-giving, or public charity of Rome, was the *sportula,* or private liberality. We have had occasion already to point out the fact that Gaius Gracchus, in his *lex frumentaria,* merely transferred from the numerous private sources of largess to the city the obligation to support the poverty-stricken populace by distribution of grain. It is now important to examine the private practices of liberality, in order that we may round out our conception of Roman charity.

Between patron and client a relation partly hospitable, partly charitable, had grown up. At rare intervals, there was an invitation to the humblest seat at the dinner-table.[46] It was customary for presents of food to be given to clients and shabby gentlemen at the outer vestibule of the house. The recipients of this liberality carried it away in baskets (*sportulae*). Connected with this practice was considerable fraud, which the patron or his steward attempted to check by keeping a list of persons entitled to receive the aid. "The pilferer grabs the dole" became a proverb. There seems to have been little hesitation at stooping to cringing servility when receiving this insulting form of hospitality. Freedom from the necessity of labor was still the ideal, and the *sportula* provided the means for keeping the hands from toil. The *sportula* grew to be a private charity of such proportions that state regulation was attempted in 54 A. D. by Nero, who reduced it to a payment in money (about $5.00), and in 81 A. D. by Domitian, who restored the custom of free distribution.

Private beneficence of wealthy Romans found other channels than largess to clients and political supporters. It was customary to make lavish expenditures on public

[45] Loch, *op. cit.,* pp. 107–109.
[46] Davis, *op. cit.,* p. 269–270.

improvements, games and popular amusements. Abbott says it was characteristic of ancient generosity or philanthropy "that its recipients are commonly the people of a single town, usually the donor's native town."[47] During his term as *ædile,* or commissioner of public works, Cæsar bankrupted himself by prodigal expenditures. This ancient practice of private benefaction lost its voluntary character in time, and eventually became a legal obligation resting on public officials.[48] When the city of Urso was founded in 44 B. C., the municipal charter required that its chief magistrate should give public entertainments for four days in honor of the gods, at an expense of not less than 2000 *sesterces.*[49] This practice is the reverse of our modern custom, since our public officials are salaried. Abbott considers that these expenditures may be roughly compared with the "campaign contributions" of candidates for office in the United States.[50] Besides this private provision for public amusement, statues, baths, porticos, or fountains were sometimes given. A citizen of Lanuvium, near Rome, cleansed and restored the water mains for a distance of three miles, replaced the pipes in position, and restored baths for men and women, all at his own expense.[51]

Such an intolerable burden did this custom of benefaction eventually become that, as early as the first century A. D., it proved necessary to resort to ingenious devices to compel men to hold public office. A member of the town council was expected to contribute to the maintenance and support of his native city, as well as to collect the imperial taxes. Says Abbott: "As prosperity declined, he found this an increasingly difficult thing to do, and seats in the local senate were undesirable. The central govern-

[47] *The Common People of Ancient Rome,* Charles Scribner's Sons, New York, 1911, pp. 185–186.

[48] *Ibid.,* p. 193.

[49] *Ibid.,* p. 194; *Corpus Inscriptionum Latinarum,* ii, 5439.

[50] *Op. cit.,* p. 195.

[51] Wilmanns, *Exempla Inscriptionum Latinarum,* 1772.

ment could not allow men responsible for its revenues to escape their responsibility. Consequently it interposed, and forced them to accept the honor. Some of them enlisted in the army, or even fled into the desert, but whenever they were found, they were brought back to take up their positions again. In the fourth century, service in the common council was even made a penalty imposed upon criminals. Finally it became hereditary, and it is an amusing but a pathetic thing to find that this honor, so highly prized in the early period, became in the end a form of serfdom."[52]

4. The Institution of Slavery

Slavery in Rome was a highly organized institution, far more systematized than it ever had been in Greece. It became a great industrial force underlying the economic activities of the nation. In our age of machine power, it is difficult to appreciate how essential slave labor was in ancient times. The slave performed work which is done for us by machinery. All heavy, large-scale, agricultural labor was performed by slaves. They did the hard work in factories, carried on the household drudgery, and were worked long hours in mines. When fair winds did not blow, slave-power was used to row the galleys. The extension of Roman domain necessitated the use of a larger army, and this involved the increasing absence of citizens from industrial labor. Consequently, the demand for slave labor grew apace and many slaves were obtained in the course of conquest. We have records of how captives taken at certain periods were sold as slaves. During the time of the later republic, captives were invariably reduced to slavery. After the victories of Paulus in Epirus, 150,000 captives were sold.[53] It is stated that Cæsar sold on one occasion as many as 63,000 captives.[54] During the Jewish war, 97,000 captives were sold as slaves.

[52] *Op. cit.*, p. 202.
[53] Livy, xlv, 34.
[54] *De Bello Gallico*, iii, 16.

In time, a regular commerce in slaves was established. Its systematic organization indicates a complete change from the primitive methods of acquiring slaves. At Delos, pirates sold great numbers of slaves.[55] Slaves were imported to Rome from Africa, Spain, and Gaul, but more generally from the Asiatic countries of Bithynia, Galatia, and from Cappadocia, and Syria. Import duties were paid on these slaves, and a tax of from two to four per cent was levied upon their sale.[56] But conquest was not the only source of slaves. Certain offenses were punished by reducing the guilty person to slavery. Such persons were then used in public works, either at quarries or mines. In the earlier days, the father could sell his children into slavery. The creditor could retain his debtor as a slave, and even sell him outside the city. The revolt of 493 B. C. was caused by the enslavement of creditors overwhelmed with usury that had resulted from losses by the hostile raids, or from their own absence during military service.

Besides private slaves, there were public slaves. At first free men performed the services required by the magistrates, but later the offices of couriers and attendants at the law courts, prisons, and temples were filled by slaves. Public works were carried on by slave labor, such as the construction of roads, the maintenance of aqueducts, and the cleaning of the city sewers. Slaves did the heavy work for private families. Not only in Rome, but also in rural and provincial towns, hard labor was performed by the slaves. The wealthy Roman usually bought two kinds of slaves, the *familia rustica* and the *familia urbana.* The former, the agricultural slaves, were under direction of a *villicus,* or slave-superintendent. Slaves were divided into several groups: those caring for the cattle, the flocks, and the stables, and those preparing food, making clothing, making tools, and repairing buildings.

[55] Strabo, xiv, 668.
[56] Ingram, *op. cit.*, p. 39.

Slaves were employed to punish delinquent slaves held in the slave prisons of rural establishments. Slaves carried on the domestic work, performed the services of the toilet and the bath, waited upon table, worked in the kitchen, and, in addition, entertained the master of the house and his guests by singing, dancing, and other arts. Some acted as attendants to master and mistress when out-of-doors. As these were posts of honor, only those noted for their beauty or strength, and those most imposing in their appearance, were selected. The more intelligent slaves attached to a great household served as physicians, secretaries, librarians, copyists, artists, and teachers. Gladiators and circus performers were commonly slaves. Private speculators who owned troupes of gladiators frequently hired them out.

It will thus be seen that the number of slaves serving individual masters was quite large. For our knowledge of the actual number of slaves attached to the private masters of these great establishments, we must rely upon casual references by classic authors. It is said that Vettius, upon entering a revolt, armed 400 of his own slaves.[57] Pliny relates that a freeman living in the time of Augustus left 4116 slaves by his will.[58] It is difficult to determine the total number of slaves at Rome or in Italy. One authority fixes the ratio of slaves to freemen during the period 146 B. C. to 235 A. D. as three to one. Thus the total number of slaves in Italy would have been about 20,832,000, and the free population about 6,944,000 during the reign of Claudius.[59]

Treatment of slaves. Since the patriarch of the early Roman family had life and death power over all his descendants, it is not to be wondered at that the original Roman law gave the master complete power of life and death over his slaves. Whatever the slave acquired by way

[57] Diod., *Fr.*, xxxvi; ii, 3.
[58] *Natural History*, xxxiii, 47.
[59] Ingram, *op. cit.*, p. 43.

of property was legally his master's, though in practice he was allowed to accumulate chance earnings or savings, known as his *peculium*. Under the law, slaves could not contract marriages. As a matter of fact, there was public sanction for their cohabitation, which practically amounted to a recognition of marriage. Penalties for crime were more severe for guilty slaves than for guilty freemen. While the punishment given under the *Lex Cornelia* for the murder of a slave or freeman was the same, the master was permitted to kill his own slave with impunity.

Although many Latin authors recommended friendliness towards one's slaves, the rapid extension of the great slave estates, or *latifundia,* throughout the rural sections reduced each slave to the position of a mere number, and it became impossible for masters to know their slaves individually. Overseers were used as superintendents and chains were resorted to, in order that the slaves might work in groups in the fields. These chains were even worn at night while the slaves slept.[60] This harsh treatment of the rural slaves was also found in the treatment of urban slaves.

Although the life of rural slaves was generally difficult, it is probable that that of the urban slaves was as little enviable. Ovid speaks of the porter as being chained in private houses. The punishments which masters inflicted on their slaves varied. The milder punishments consisted in personal chastisement, and in banishment to rural labor. The more severe punishments were employment in the mines or quarries. In the time of the republic, a master might send his slave to fight wild beasts in the amphitheater. Some masters were excessively cruel and portioned out severe punishments for trivial mistakes or even accidents. Ordinarily, his interest led a master to avoid extremely harsh treatment, but, when the slave had passed the working age, his lot was likely to be a hard one.

[60] Pliny, *op. cit.*, xviii, iv, 4, 5, and vii, 4.

In the period of the later republic and under the early empire, the large number of slaves was a constant menace to peace. There was a conspiracy among the slaves about 500 B. C., and another about 400 B. C. A formidable insurrection came near to breaking out in 498 B. C. Slave wars broke out in Sicily and Italy.[61] During the reign of Nero there were threatening movements of slaves. Even in the later stages of the empire, the danger of servile insurrection had not passed. When the Goths invaded Italy, their armies were swelled by some of their countrymen who had been slaves in Rome. Forty thousand slaves went over to Alaric when he said siege to Rome.

The moral influence of slavery was most degrading, because the teachers of children were slaves. They tended to corrupt the youth by flattery and encouraged self-indulgence instead of disciplining their unruly charges. It is probable that the barbarous spectacle of the amphitheater was popular because of the hardening effect of the degrading system of slavery which had accustomed the people to brutality.

The decline of the slave system. In general, slaves were more easily emancipated in Rome than in Greece. There were two kinds of manumission. Under the *justa,* or regular method, there were four modes: first, by adoption; second, by testament; third, in the time of Vespasian, by inscribing the slave's name on the roll of citizens and making presentation to the census or to the censor; fourth, the more usual form, by *vindicta.* According to this last mode, the master said "liber esto," in the presence of the same magistrate. Under the second form of manumission, the *minus justa,* the master merely manifested good-will by some formal act before his friends, which signified his intention to liberate the slave. Of course this latter form was extra-legal.

After liberation, the freeman became the client of his

[61] Plutarch, *Lives,* Sull. 9 Sall. Cat. 24, 56.

master. In this relation the master must protect the freeman and defend him in the courts, while, on his part, the freeman took the master's name, paid him deference, and lent actual pecuniary aid. If it happened that the freeman died intestate, his patron received his property at death. Although it was not until after three full generations of freemen that the descendants of the freemen became free citizens, yet in this way the slave element in the population tended to be slowly assimilated. It is estimated that in Cicero's time the thrifty slave could save enough *peculium* in six years to purchase his freedom. About 3 A. D. we find that the law prohibited manumission, except in certain specified cases, and about 7 A. D., the proportion of a man's slaves which he could liberate by testament was fixed by the law. Freemen gained steadily in influence in the time of the empire and were gradually admitted to the rank of certain magistrates of minor importance. Administrative services were frequently filled by the freemen.

The institution of slavery underwent a marked change during the second century of the Christian era. More and more, principles of liberality and humanity were applied to the slave classes. Some of the philosophers condemned the cruelty of the gladiatorial combats. As the age of conquest passed, the supply of slaves could not be increased, and each slave became of greater value. Consequently, Rome favored a policy of manumission. The emperors understood that, since warlike activities were on the wane and industrial activities on the increase, it was desirable to facilitate the work of the laboring classes. The general tendency of the law was to make the lot of the slave easier, and to facilitate manumissions. For example, an edict of Diocletian prohibited a freeman from selling himself into slavery, and a man caught stealing was punished by death. The position of the insolvent debtor was made easier after the annulment of slave sales, since the slave, his parents and family, must be returned to the seller. Thus families

were saved from being broken up. In the time of Hadrian, the power of life and death was taken away from masters. Slaves who ran away from their masters because of excessive cruelty were brought back, and could be sold to new masters; they were not returned to their old masters. The master who killed his slave without just reason received the same punishment as if he had killed another man's slave.[62]

The expansion of Christianity in the Roman world favored humane treatment of the lower classes. Yet slavery was such a fundamental system in the Roman economic structure that no immediate or complete change to freedom could be hoped for. The institution of slavery was deeply rooted in Roman society, and generations had to elapse before new customs and organization could replace the old.

In a very real sense, slavery in Rome was a social institution (see Chapter II). Attitudes of distrust, envy, and hostility alternated with fear, servility and subordination on the part of slaves. The public, the freemen, and the masters, with their conventionalized attitudes of superiority, arrogance, domination, aversion, and fear, collectively exploited their disadvantaged human fellow-beings. Long after the utilitarian contribution of slavery had begun to decline, it is probable that the "status" of the slave remained a symbol of earlier economic effectiveness and helped, together with the traditionalized reciprocating attitudes of the two opposing divisions of society, to preserve the tottering institution. In the laws of *justa, vindicta,* and *minus justa,* are preserved for us the record of transition to a more normal human status.

Serfdom. Between the great industrial system of slavery as it existed in the ancient times, and the system of free labor to which we are accustomed to-day, there was an intermediate stage known as "serfdom." This transitional

[62] Ingram, *op. cit.*, p. 63.

state was favored by a number of conditions enumerated by the economist Ingram.[63]

In the first place, the Roman era of conquest having reached its completion, the supply of slaves diminished. The regular importation of slaves from conquered territories fell off. Since the diminished supply of slaves had enhanced the value of each, the effect was to improve the condition of the slave. It became of interest to each family to keep its hereditary slaves. This favored the transition of slavery into serfdom. When the external slave-trade was abolished, the internal sales were ended, and slaves became attached to the soil.

The second condition favoring the transition to serfdom was the direct rehabilitation of the free laborer. From the second century and after, this process is noticeable. In the public service, freemen were employed as subordinates to magistrates and priests. Other minor positions could be legally filled only by citizens. Corporations of free plebeians carried on the productive industries owned by the state, and under these free workmen there were public slaves. Even in private service, the better posts were often held by freemen; for example, in the higher arts of medicine, and grammar. Freemen appeared on the stage and in the arena. Although slave-labor was mainly employed in the factories and workshops, wealthy persons sometimes hired free laborers. The latter often united in associations to compete with these private shops. All along, free persons had been found as tenants on the great estates, and occasionally they hired themselves out as day-laborers to cultivate the land.[64]

The third condition favoring the growth of serfdom was the existence of hereditary fixity of occupation and profession. Classes who worked in administrative service must remain in this employment. They were not even permitted

[63] Pp. 72–80.
[64] *Ibid.*, p. 74.

to marry their daughters outside of *collegia* to which they belonged. These obligations were inherited by their children. The fixity of occupations is indicated by a provision that those who abandoned their work should be sought for, and forced to return. In a few instances, substitutes could be provided, but in most cases the worker and his family were bound to remain generation after generation in the same employment as their ancestors. The sons of a soldier were bound to follow military service. The state treated the free man as its servant who might be required to furnish money or labor. This permanent fixing of a man's labor for him, by binding his descendants to remain in the same occupation, had the advantage of securing public order, enforcing industrious habits, and supplying the financial needs of the state, but individual initiative and personal independence were lost by such a semi-caste system. Yet the minute regulation of labor amounted to a reduction of the distance between the slave and the free man—the latter having, in some respects, almost as little mastery over himself as the slave.

A fourth condition should be mentioned in connection with the position of rural slaves. There was a tendency for the rural slave to be merged into the order of the *coloni*. Originally, the Roman *colonus* was a freeman who held land on lease, under the obligation to pay the owner a fixed annual sum, or a portion of the produce of the land. In the fourth century A. D., the *colonus* and his descendants were bound to the soil in order to check the growing tendency of *coloni* to desert the country and move to the city, that they might avoid the heavy burden of taxation which rural life entailed. Ingram concludes that the law merely met and extended a condition of things which had previously existed, when it recognized this personal and hereditary fixity of the rural laborer.[65] Tenants by contract, who had failed to pay their rent and so remained indebted

[65] Ingram, *op. cit.*, p. 77.

to the landlord, composed a portion of the class of *coloni.* Another section of this class was composed of foreign captives, or emigrants and fugitives from barbarian migrations, settled upon the land by the power of the state. There were also some small proprietors and poor men who voluntarily became *coloni* because they thought it would improve their condition.

These *coloni* paid the proprietors a fixed portion of the produce, and gave a certain amount of labor on that part of the domain which the master kept for his own use. The *coloni* paid taxes to the state, but the proprietor was responsible for these taxes. The position of the *colonus* was fixed permanently; he could not leave his land. If he wandered away, the law required that he be brought back and punished. The person who gave him asylum must restore him and pay a penalty. This rigid regulation went so far as to prohibit marrying outside the domain. The children of the *colonus* must remain in the same status, and could not leave the land to which they were attached. In the fifth century, the law provided that a *colonus* who voluntarily came into an estate became forever attached to it. After living there thirty years, the master of the domain could punish the *coloni,* and, when they attempted to escape, could chain them. In case of sale, the lands of the *colonus* were also transferred, for they could not be separately sold. While the *colonus* could possess property of his own, he had to obtain the consent of the master before he could alienate it. In some respects, therefore, although the members of the class were personally free, they were nevertheless in a semi-servile condition. But the position of the *colonus* was not entirely degraded. It was a considerable advance upon the system of slave cultivation by the *familia rustica.* Since there was a certain similarity between the condition of the *colonus* and that of the slave, there tended to be a fusion of the two groups into a single class.[66]

[66] Ingram, *op. cit.,* p. 80.

In addition to the *coloni,* there remained a class of prædial slaves on great country estates, who worked together in groups under the direction of overseers. Now it became advantageous to settle certain slaves on other portions of the estate, granting them small bits of land under conditions which approximated those of the *coloni.* These slaves had no property, and at first were entirely at the disposal of their masters. But it was to the landlord's interest to treat them with a certain amount of consideration, and they continued on their holdings for such long periods of time that they really appeared to inherit them. The law tried to prohibit the sale of these slaves unless their land was sold. Yet after the invasions, the legal distinction between *coloni* and slave-tenants still continued. In practice, however, the difference was not marked, for there were frequent intermarriages between the two classes, and, by the end of the seventh century, the distinction between the two classes had almost disappeared.[67]

Since the church favored individual emancipations, the modification of the slave system increased, for it must be remembered that adherents of the Christian doctrine were drawn from all social ranks, from freemen, serfs, and slaves.

Thus the causes which gradually undermined and broke up the slave system were within the Roman empire. The migrations of the northern barbarians exerted a minor influence in favor of freedom. Tacitus describes a situation among the Germans which, although it was not chattel slavery, was a system in which servile classes settled on definite portions of the domain and paid a fixed share of the produce to its owner. On the whole, these influences were not as important as those already enumerated. The change from slavery to serfdom, and eventually to free labor, was one of the great peaceful revolutions of history, and had a beneficial effect upon society. Now that the serf

[67] Ingram, *op. cit.,* p. 82.

was not liable to separation from his wife and children, he was able to form a family in the true sense of the word. Since he was allowed by custom to retain a portion of his earnings, he could look forward to the time when he might purchase his complete freedom. As the head of a separate household, he enjoyed a sort of independence. The incentive to save developed habits of industry, thrift, and self-denial. In this way the serf was securing a training which would fit him for subsequent freedom.

5. The Organization of Labor [68]

Between plutocracy on the one hand and slavery on the other, the Roman middle classes were ground to pieces and their initiative strangled.[69] Yet in the period of the republic, there was sufficient specialization in manufacturing processes to create a considerable division of labor, and gilds of workmen and traders (*collegia*) multiplied without restraint.[70] It is impossible satisfactorily to trace the growth of gilds at this time because information is lacking,[71] but at the time of the empire our sources of information about workingmen's organizations are more abundant. Indeed, there are some twenty-five hundred inscriptions dealing with this subject. In the city of Rome alone, there were eighty different trades whose workers were organized into gilds. There were skilled and unskilled workmen, porters, and goldsmiths, and dealers in oil, wine, fish, grain, perfumes, hay, and rags, all organized into societies. We find gild inscriptions from 475 towns and villages in the empire. In the Greek portion of the Roman dominion five gilds were in Tralles, Caria, six in Smyrna, one in Alexandria and eleven in Hierapolis, Phrygia. At Rome, there were

[68] Dill, S., *Roman Society from Nero to Marcus Aurelius*, London, 1905, pp. 251–286; Davis, *op. cit.*, ch. v; Abbott, *op. cit.*, pp. 215–234.

[69] Dill, S., *Roman Society, Last Century of the Western Empire*, London, 1899, pp. 245–281.

[70] Dill, *op. cit.*, p. 254.

[71] Abbott, *op. cit.*, p. 216.

more than 100, and in other Italian cities in proportion.

Ancient and modern organizations of labor. Ancient gilds, such as existed during the Roman Empire, were organizations of men working in the same trade, but here similarity to modern trade-unions ends. Their object was not to better the social and political position of the workman, or to raise wages, shorten hours, and improve working conditions, like the modern union. Nor did they seek, like the medieval gilds, to limit the number of apprentices in a trade, or to develop skill and artistic taste in a craft. Their end was to provide means of satisfying the desire of a submerged class for religion, companionship, sympathy, and help in the great natural emergencies of life.[72] Hence the characteristic features of Roman gilds were the provisions for social gatherings, and burial. An inscription upon a tombstone of central Italy states that the deceased "bequeathed to his gild, the rag-dealers, a thousand *sesterces,* from the income of which each year, on the festival of the *Parentalia,* not less than twelve men shall dine at his tomb."[73] Another, from northern Italy, relates that the mother of a certain member of the rag-dealers' association gave a sum of money, from the income of which there should be provided an annual banquet in the temple.[74] The menu of such a dinner seems to have included lamb, pork, bread, salad, onions, and wine. The expense of entertainment was about twenty-seven dollars, but in those days the purchasing power of money was at least three times what it was in 1911.[75]

The *schola* in which banquets were held was used for many purposes that the modern club-house serves. Besides these death anniversary dinners there were regular meeting times for social intercourse and banqueting. The rev-

[72] Abbott, *op. cit.*, pp. 221–222.
[73] *Corpus Inscriptionum Latinarum*, xi, 5047.
[74] *Ibid.*, v, 7906.
[75] Abbott, *op. cit.*, p. 223.

enues of the society were obtained from initiation fees, monthly dues, donations, and occasional fines. Every gild had its patron. He might be a high official of the empire, a magistrate, a priest, a great merchant, or a simple freeman. The finances of the *collegia* were aided by the gifts of rich patrons. These donations had two chief objects: commemoration of the dead, and provision for social enjoyment.[76] The religious character of these gilds of workmen seems strange to us, yet each *collegia* put itself under the protection of a deity, and was associated with a cult. For example, the cabmen of the Tiber had Hercules as their guardian.

Burial provisions formed an important part of the expenditure of these societies. One epitaph states that the rag-dealers' gild contributed three hundred *denarii* to the burial expenses of a certain physician.[77] The burial regulations of a gild at Lanuvium read as follows:

"It has pleased the members that whoever shall wish to join this gild shall pay an initiation fee of one hundred *sesterces,* and an amphora of good wine, as well as five *asses* a month. Voted likewise, that if any man shall not have paid his dues for six consecutive months, and if the lot common to all men has befallen him, his claim to a burial shall not be considered, even if he shall have so stipulated in his will. Voted likewise, that if any man from this body of ours, having paid his dues, shall depart, there shall come to him from the treasury three hundred *sesterces,* from which sum fifty *sesterces,* which shall be divided at the funeral pyre, shall go for funeral rites. Furthermore, the obsequies shall be performed on foot." [78]

Abbott points out that these gilds of humble working folk provided for the natural desire of all human beings to enjoy authority over others, and to satisfy their longing for

[76] Dill, *op. cit.,* pp. 273–275, 282.
[77] *Corpus Inscriptionum Latinarum,* iii, 3583.
[78] *Ibid.,* xiv, 2112.

ceremony.[79] Consequently, the gilds reproduced in miniature the popular assemblies, official positions, and insignia of the Roman government—the larger activities in which they were denied a share. Hence the Roman gilds were not economic units; they were rather social fraternities.

Several conditions conspired to crush the initiative of ancient gild-members, and to prevent their collective action to secure higher wages and improved working conditions. Manufacture, in Roman times, was carried on by artisans working singly in their own shops, and factories were comparatively small establishments in which elaborate machines were unknown. Although there was a considerable division of labor, the minute specialization characteristic of modern industrial processes did not exist, and power was supplied by human and animal energy alone. Thus there were no large groups of workmen employed in a single establishment and working under common conditions, as at present. There was a closer relation between employer and employee than with us, and the isolation of master from man had not been accomplished. All these conditions helped to keep workmen separated into small groups, and interfered with the development of a labor-class consciousness, which encourages common action to advance class interests.

Then there was always the great servile population, sullen, individualistic, and reluctant, an utterly demoralizing competitive force. In the empire, the employer was usually able to secure a limited amount of slave labor, and this fact must have discouraged all hope of improvement. The scale of wages was fixed by the rate of slave hire, since it was customary for owners to let their slaves out by the day or job in the various occupations to which they had been trained. Wages and their purchasing power, in the year 301 A. D. or thereabouts, may be estimated by comparing

[79] *Op. cit.*, p. 226.

the daily earnings in some forty different unskilled and skilled occupations with the prices of foods and clothing stated in Diocletian's edict.[80]

WAGES AND FOODS, 301 A. D.[81]

Wages per day	cents		Common foods	Cents
Unskilled workman	10.8	(k)	Wheat, per bushel	33.6
Bricklayer	21.6	(k)	Rye, per bushel	45.
Carpenter	21.6	(k)	Beans, per bushel	45.
Stone-mason	21.6	(k)	Barley, per bushel	74.5
Painter	32.4	(k)	Fresh pork, per lb.	7.3
Blacksmith	21.6	(k)	Mutton, per lb.	4.9
Ship-builder	21 to 26	(k)	Sea fish, per lb.	9 to 14
(k) receives keep also.			Cheese, per lb.	7.3
			Eggs, per doz.	5.1
			Milk, sheep's, per qt.	6.

Slave labor was essentially wasteful, because the great masses of slaves were unskilled and reluctant workers. These facts combined to hinder the growth of a spirit of initiative and independence among the free artisan classes of Rome.

The corrupting influence of dole-giving has already been mentioned. It effectively undermined whatever contributed to the habits of self-respect and independence in the urban proletariat, and this must have contributed to the direct demoralization of the artisan, or, at the best, adversely influenced his habits of thrifty application by the depraved example set by its recipients. Even mechanical invention was discouraged. Under these circumstances, there could be

[80] *Corpus Inscriptionum Latinarum*, iii, 1926–53. This edict was an effort to deal with the pressing problem of the high cost of living. At one point it reads: "Who is of so hardened a heart and so untouched by a feeling for humanity that he can be unaware, nay, that he has not noticed, that in the sale of wares which are exchanged in the market, or dealt with in the daily business of the cities, an exorbitant tendency in prices has spread to such an extent that the unbridled desire of plundering is held in check neither by abundance nor by seasons of plenty?" Translation by F. F. Abbott, *The Common People of Ancient Rome*, p. 155.

[81] According to Abbott, pp. 158–165, 173–174.

little industrial progress, and consequently manufacturing stagnated.

The obstacles to industrial progress. The demoralization of industry would not have entailed such serious consequences, were it not for the fact that in other respects Roman economic methods were demoralized. Under the empire the amount of gold and silver had not materially increased, because the mining of precious metals had diminished, yet at the same time gold and silver were constantly removed from circulation for use in the arts or for temple offerings, and were hoarded by private persons. Added to this drain on the circulating medium, enormous sums of money were continually exported to Arabia, India, and China, to pay for silk, spices, perfumes, and many other luxuries. Moreover, the imported food supply involved the drain of money from Italy.[82] The natural consequence of such a perverted national economy was that the amount of money in circulation became smaller every year. To remedy this situation, the government tried the expedient of debasing the coinage by mixing copper with precious metals. This practice had attained such proportions by the middle of the third century A. D. that a piece which was worth forty cents at the time of Augustus came to be worth but one cent. Soon the well-known economic principle that alloyed coins drive pure coins out of circulation began to act, and all gold and silver coins were driven from circulation by the pale copper coins. An era of rising prices was experienced.

Just at this juncture in the development of Roman national economy, it was most inconvenient to have a debased currency, for the demand for money had increased rapidly. The large standing army needed its pay at regular intervals,

[82] A suggestive treatment of the various causes of the decline of ancient civilization may be found in W. L. Westermann's article, *The Economic Basis of the Decline of Ancient Culture, American Historical Review*, vol. xx, no. 4, p. 723.

the number of magistrates had multiplied, and the cost of operating the government had grown because of the increased expenditure and extravagance of emperors and many other high officials. Revenue to meet these large expenses was obtained by taxation, but, since coins were practically worthless, money taxes failed to supply the needs of the government and resort was made to taxation in kind. The burden of the taxes fell chiefly upon poor peasant proprietors. The rich escaped the burden because their taxes were proportionately lighter and they had means of avoiding payment.

Had industry flourished, Rome might have produced sufficient value in manufactured produce to pay for the imported grain and luxuries, and hence might have been saved the economic demoralization consequent upon a debased currency. But consumption had exceeded production in the Roman Empire. This economic decline affected the organization of workmen adversely, and the numbers in labor organizations diminished to an alarming extent. The government had granted the *collegia* certain privileges, such as the right to receive legacies and to possess property and slaves; also exemptions from burdens which ordinary citizens bore, for instance, freedom from military service, municipal service, local taxes and the like. But, in return for these grants, the gilds were required to perform certain public services. For example, gild officers were required to assist in collecting taxes. The burden of these obligations became so heavy that it caused a loss in membership. To stop this tendency which endangered the industrial interests of the empire, the government forbade men to withdraw from gilds. Membership in labor organizations henceforth became hereditary, and the sons of artisans were bound to follow their fathers' trades. A hereditary fixity of industrial occupation, as binding as the dependence of the serf upon the soil, was thus effected, and all hope of industrial progress from per-

sonal initiative and mobility of labor was, for the time being at least, lost.

Rostovtzeff [83] has summarized in a thoughtful and scholarly fashion the various theories as to the decay of ancient civilizations. Beloch [84] attributes the decay to absorption of the Greek city-states by the Roman Empire, thereby forming a world state which checked the further development of the creative forces of Greek culture. The decay of Roman civilization is explained by Kornemann [85] as caused by a reduction in the armed forces of the Empire. Heitland finds the causes of decay in the failure of ancient civilizations to find a place for the masses to share in government. Ferrero's explanation is more narrowly political than these. Rostovtzeff completely discards the economic explanation and contends that, during the ages of highest development, ancient civilizations attained varied forms of capitalism, which, although in no sense industrial capitalism, were none-the-less far more elaborate than household economy.

"To sum up what I have said, the economic simplification of ancient life was not the cause of what we call the decline of the ancient world, but one of the aspects of the more general phenomenon which I am trying to explain. Here, just as in the other spheres of human life, the political, social, intellectual, and religious, the more primitive forms of life among the masses were not absorbed by the higher forms but triumphed over them in the end. We may select one of these phenomena and declare it to be the ultimate cause; but it would be an arbitrary assumption which would not convince any one."

The biological solution, which attributes the decay to

83 *The Social and Economic History of the Roman Empire*, Oxford, 1926, ch. xii.

84 "Der Verfall der antiken Cultur," *Hist. Zeitschr.*, 84, 1900, p. 1 ff.

85 "Das Problem des Untergangs der antiken Welt," *Vergangenheit und Gewagenwart*, vol. 12 (1922), pp. 5, 6.

deterioration in the stock of the people, he also discards. In the claim that Christianity brought about decline he finds too narrow an argument. Each of these explanations contributes to our understanding. No one of them fully explains the phenomenon. In general, Rostovtzeff seems to incline to the view that there was one prominent feature common to decline in the political, the social, the economic and the intellectual life of ancient civilizations. This common feature was the gradual absorption of the higher classes by the lower, and involved a steady reduction of the standards of city life.[86] The intellectual upper classes were slowly penetrated by the lower city classes who were either indifferent or actually hostile to intellectual attainment. Meanwhile, the intellectual classes were unable to assimilate the religious attitudes of the masses. Violent outbreaks of civil strife within, complicated by the inflow of barbarous elements from without, completed the downfall and decline of ancient civilization.

[86] *Op. cit.*, pp. 479–480.

CHAPTER VI

SOME CHANGES IN THE MATERIAL CULTURE OF MEDIEVAL ENGLAND

A MEANINGFUL perspective towards the material culture of contemporary times depends on our ability to perceive the main outlines of the economic systems which preceded it. We have just completed a brief survey of some of the cultural changes of Greek and Roman times. It will now serve our purpose to pass in review some of the cultural changes in England towards the close of the medieval period.

1. Commerce and the Towns

The revival of town life in the second half of the middle ages was largely an outgrowth of the spread of commerce. A leading writer on economic history says: "Commerce had been an essential condition without which the towns of Western Christendom would not have come into being, and the development of trading intercourse in the eleventh and twelfth centuries afforded opportunities for the growth of civic wealth and power." [1]

According to Giry,[2] it is possible to trace the tide of commercial prosperity as it flowed from south to north, first affecting the Italian Peninsula and the towns of Septimania and Provence, later reaching the Rhine lands, Flanders and northern France, and finally crossing the channel to England. But it is our purpose in this section simply to indicate in a general way how commercial ex-

1 Cunningham, *Western Civilization*, vol. ii, p. 90.
2 *Histoire Générale*, edited by Lavisse and Rambsoud, vol. ii, p. 420.

pansion was related to the early growth of towns in which, eventually, manufacturing industry was to come into its own.

Towns secured their municipal liberties by various means, and the story of this gradual emancipation from feudal restraints is exceedingly interesting. Increasing trade made the towns grow rich and powerful, and some fought for their political freedom, while others purchased it from bankrupt princes. In different ways, and on different occasions, freedom was obtained. The English towns of Portsmouth and Norwich, to mention two cases, gained their charters by paying part of Richard I's ransom in 1194.[3]

The crusades. The opening up of the East to the commerce of western Europe came from new relations established by the crusades in the period 1095–1270 A. D. Social and economic conditions, as well as a curious complex of motives, led to the extraordinary medieval phenomena of the crusades. Population was pressing upon the means of subsistence, and a crop failure was all that was necessary to precipitate a migratory movement among the landless and impoverished men whose condition was one of unrelieved misery. The imagination of the more intelligent was fired by tales which travelers brought from the Orient of fabulous wealth, gold and silver, beautiful women, and rich spoils awaiting the hand of the conqueror. Added to these influences, there was a religiously fanatical habit of mind which showed itself in the rapid spread of popular manias, delusions, and hallucinations. Sumner[4] considers the crusades as fairly typical cases of mob excitement and delusion, part of the monstrous mass-phenomena of the middle ages. Finally, it must be admitted that some persons were, no doubt, animated by a sincere desire to wrest the Holy Land from the infidels. But, whatever the circumstances which initiated the movement and sustained the

[3] Gibbins, H. deB., *Industry in England*, 4th ed., 1906, p. 91.
[4] *Folkways*, Boston, 1907, pp. 210–214.

crusading spirit, there is no difficulty in understanding the important part played by the crusades in opening up commerce.

The transportation of large bodies of troops necessitated the organization of methods for carrying supplies, and this system, once established, was easily turned to use for regular purposes of commerce. Tastes for new luxuries, such as cotton, silks, sugar, water-melons, spices, pepper, perfumes, jewels, glassware, to mention only a few, when formed by the crusaders stimulated commercial intercourse with the East to supply these products to the West. The Italian seaports, Venice and Genoa, were large beneficiaries of this new trade. In fact, through the efforts of Venice the Fourth Crusade was a commercial enterprise. The princely leaders of the Crusades were constantly in need of funds, and corporations of Italian bankers were formed to supply certain sums of money at designated places as, for example, in all the principal cities of Cyprus, Syria, and Egypt. Cunningham says:

"The impulse given to the Italian towns was communicated with more or less rapidity to other centers in Europe. The cities in the Danube valley must have profited to some extent by catering to the armies which passed along that route; while Augsburg and Nuremberg, which were in direct communication with Venice, gained with the increase of her commercial activity. . . . In the fourteenth century we can estimate the full extent of the impulse given by the Crusades. We see organized commercial communication between all parts of Western Christendom and with countries which lay outside, and we see, too, that a new development of industry followed in connection with the improvement of facilities for trading intercourse." [5]

The close of the crusading period brings us to a stage in commercial development and town growth characterized by the creation of leagues and confederations of trading

[5] *Op. cit.*, pp. 128–129.

towns. Augsburg and Nuremberg were leaders in the Swabian Confederacy, founded about 1300, and had commercial relations with Venice and Genoa, as did the towns of the Confederacy of the Rhine. From the twelfth century protective alliance of Hamburg and Lübeck, there developed the Hansa League of the thirteenth century. This league comprised seventy cities, organized into four districts under the leadership of Lübeck, Cologne, Brunswick, and Danzig, respectively. It succeeded in gaining complete monopoly of the trade of the Baltic region, suppressing piracy, preserving order, and establishing factories at Novgorod, London, Bergen, and Bruges. The trade consisted largely of raw products, although such manufactured products as linen, cloth, and metal work were exchanged.[6]

Commercial expansion increased the number of merchants engaged in active trade, and this class soon obtained a dominating influence in town government. "The bankers, who acted as agents for the collection of papal revenue, were important people at many centers. At Florence, the merchants who imported cloth had a leading position; in London, the grocers, who dealt in bulky goods which were weighed by the large beam, seemed to have monopolized all city dignities for a time, though the mercers, who dealt in silk and other valuable goods weighed in a small balance, had the older organizations there. These groups of merchants, associated in companies for the wise regulation of their own trades, had practical control of the government of their city."[7]

The gild merchant. Trading activities centered in English towns were protected and regulated by "gilds merchant." These organizations were composed of all the inhabitants of a town who habitually engaged in the business of selling a great variety of articles. Unlike the ancient gilds, whose chief objects of existence were social and re-

[6] Gibbins, *op. cit.*, pp. 48–54, 60–71, 74–75.
[7] Cunningham, *op. cit.*, p. 94.

ligious, the gild merchant was primarily an association to protect and regulate trade, and to preserve for its members a trade monopoly. Among other privileges, its members enjoyed the following: exemption from tolls; exclusive right to sell at retail; and the right to buy from another merchant at cost price.[8] Charitable, fraternal, and religious activities were really of secondary importance, although a great part of the time of the gild merchant was spent in holding meetings and feasts.[9]

2. Handicraft Industry and the Craft Gilds

The gild merchant experienced a decline in power during the rise of the craft-gilds in twelfth and thirteenth century England. Ashley says: "The rise of the craft-gilds in the twelfth and thirteenth centuries meant the appearance in western Europe of industry as a separate economic phenomenon, as distinguished from agriculture on the one side and trade on the other."[10]

The craft-gilds were composed of a body of men with whom manufacture was not a by-employment, but the main business of life. Town living had by this time so well established habits of peace and social order that growing crops and raising herds of cattle could be cared for without danger of molestation. As a consequence, the food supply increased to an extent which permitted the existence of a non-agricultural class. Moreover, the demand for manufactured articles settled down to a steady basis, and men could safely devote their entire time to supplying the need.

The handicraft system. The manufacture of marketable articles by artisans who were members of craft-gilds became an industrial system in itself. It was one of the really significant stages in the progress of industry, and is gen-

[8] Gross, C., *The Gild Merchant*, vol. i, pp. 38, 40, 49.

[9] Cheney, E. P., *An Introduction to the Industrial and Social History of England*, New York, 1908, pp. 59–64.

[10] *Introduction to English Economic History*, New York, 1893, vol. ii, p. 99.

erally known by the name of the "handicraft system." Seligman says:

"Under this system the artisan is independent; he no longer works in the house of the consumer. He occupies his own house, goes to market to purchase raw materials, works up the raw material in his own home with his own tools, and sells the finished product to the consumer in his own shop. . . . Every phase of the process, down to the sale of the finished commodity, is in the hands of the workman himself. The workman or craftsman, moreover, finishes everything by hand, and it is for this reason that we speak of the 'handicraft system.' This does not mean that things were not previously, or even subsequently, made by hand, but calls attention to the fact that the distinguishing mark is the growing importance of industry, and the rise of an independent class of workmen who conduct business enterprises by themselves. . . .

"In the Middle Ages workmen gradually banded themselves together by trades into compact organizations, known as gilds or crafts. Historically, the system has therefore come to be known as the 'gild system.' The gilds, however, were a result rather than a cause; and in many parts of the world we find the handicraft system without the gilds."[11]

Manufacture was carried on in the home-shop to supply the steady and dependable demand of a small group of customers, who lived in the town, or at least in the immediate vicinity. Only a little capital was needed. It consisted of the home-shop, a few relatively simple tools, and a small supply of raw materials. The demand for products of these small shops was a staple demand, and the rapid and incalculable fluctuations of the modern market were unknown, because most of the articles were called for by necessity and

[11] *Principles of Economics*, Longmans, Green & Co., New York, 1908, pp. 90–91; also Ashley, *op. cit.*, pp. 218–219. In the present book Seligman is followed rather than Ashley, and the term "handicraft system" is used as a wider term which, in medieval times, embraces the gild system.

not by fashion, and the market was strictly local. The trade was carried on in a given family and considerable manual skill was attained. No new inventions or improved methods were introduced to disturb the regularity of production, and hence the regulation of prices and methods of manufacture was easy.[12] Working in his own shop with his own tools upon his own material or that brought him by a customer, the artisan enjoyed a considerable degree of personal independence. The average worker procured his own raw material, then transformed it into the finished article by the labor of his own hands, and finally sold it by his own efforts at shop or market. Thus the whole process of production was in the hands of the artisan. In other cases, a customer brought the materials to the shop, and in due time returned for the article, or the artisan worked in the customer's house upon materials furnished him. But in any event, the worker was able to follow the product from its raw condition through successive stages in the process of manufacture to its finished state, and took a certain pride in its production. Here is a sharp contrast to the factory manufacturing processes of to-day, under which the average laborer performs one simple operation upon one part of an article, and may not even know the purpose of the finished product. This handiwork method made it inevitable that shops should be small, with no large class of wage-laborers like the great factories of to-day.

According to modern terminology, it seems as though the gild-craftsman was employer, employee, capitalist, and salesman, all in one, yet the terms do not accurately describe the situation. We must remember that the capital investment was small, the apprentices and journeymen in the shop of the master were few, and the science of salesmanship and commercial routing had not developed. The division of labor in productive processes was as yet simple,

[12] Ashley, *op. cit.*, vol. i, pp. 92–94.

and it lacked the high specialization of contemporary times which has given the terms "employer," "employee," "capitalist," and "salesman" their significant meanings.

As early as 1130 A. D., there were gilds of weavers in London, Lincoln, and Oxford. Gilds existed among the cordwainers of Rouen, and tanners of Ghent, and the drapers of Valenciennes.[13] It was not long before crafts other than the weavers were organized into gilds, and we find such trades as glovers, girdlers, pocket-makers, skinners, white tawyers, fletchers, bowyers, stringers, spurriers, dyers, and fishmongers, organized into independent bodies. By 1350, there were forty gilds in London alone.

Internal organization of the craft-gilds. The craft-gilds "were formed primarily to regulate and preserve the monopoly of their own occupations in their own town, just as the gild merchant existed to regulate the trade of the town in general."[14] They were usually subject to the authority of the town government, and sometimes enjoyed the special privilege of a charter from the crown. They regulated the work of all artisans in the trade, and no one was allowed to work at a craft until he had obtained the approval of the gild's officials, and admission to the organization.

Gibbins says of the craft-gilds: "They first arose, of course, in the towns, and originally seem to have consisted of a small body of the leading men of a particular craft, to whom was confided the regulation of a particular industry, probably as soon as that industry was thought of sufficient importance to be regulated."[15] Shops of the same trade were located in the same locality of the town, much like the grouping of artisans in Athens.

The workman attained full membership and influence in the counsels of the gild only after he had passed through

[13] Cunningham, *op. cit.*, vol. ii, pp. 95–96.
[14] Cheney, *op. cit.*, p. 65.
[15] *Op. cit.*, p. 95.

the successive grades of apprenticeship and journeyman, and had reached the position of a master. The system of each master having apprentices was designed to secure a continuous supply of competent workmen for the future. The young man entered the trade as an apprentice, and was bound to a master for a number of years, differing in different crafts, but frequently seven years. The parents of the apprentice usually signed a contract which guaranteed that clothing, food, and lodging should be provided by the master, in addition to the understanding that he should teach the apprentice all that he himself knew about the trade. The contract protected the master by stipulating that the apprentice, on his part, was bound to keep the trade secrets of his master, obey his orders, and work in his shop. It happened occasionally in French gilds that the apprentice received a small salary after the first two or three years, if the craft authorities recognized him as a capable workman. In England, this sometimes occurred after the fifth year, or a little pocket-money was given for the first few years. In general, however, the apprentice was unpaid. The craft limited the number of apprentices that a master might keep; for example, to that which a master could "keep, inform, and teach." The slaters of New Castle had a requirement that a master should not take a second apprentice until the first had served six or seven years. These regulations make it clear that the instruction given by a master was of the most approved individual nature. In the beginning, this policy of apprenticeship regulation aimed to secure thorough training, but later it was dictated by the selfish motive of limiting competition. In time, the gilds strictly regulated admission to apprenticeship. Foreigners and certain stipulated classes were excluded, and in some instances even those who used husbandry until the twelfth year.[16]

[16] Gibbins, *op. cit.*, pp. 89–99; see also Cunningham, W., *Growth of English Industry and Commerce*, 4th ed., 1905, pp. 336–353.

At the expiration of his term of apprenticeship, the young artisan became a "journeyman" or full workman, and continued in the shop of his master as a regular wage-earner. If the journeyman was frugal, he managed to save enough money from his wages to set up an independent shop of his own, and, as soon as he had produced an article of the trade which fulfilled standards set by the gild officials, he became a master workman. In this capacity he trained apprentices in his own shop, and employed journeymen at wages. Since shops were in the homes of artisans, they were of necessity small, and so few apprentices and journeymen were employed that differences in the position of the different classes of workmen were not great, thus making the relations of master and man of a very personal nature.

Activities of the craft-gilds. Each gild had a very definite organization. There were rules and regulations providing for officials and their powers, the time and purpose of meetings, common religious observances, feast days, fines and benefits of members, the presentation of "mystery plays," and other activities.

Strict rules governing the manufacture of goods endeavored to prevent fraud and to secure the observance of certain standards of size and quality in the production of trade articles. Whenever an article was made in violation of these regulations, it was termed "false." False work was penalized by fines, one half of the fine going to the town funds, and the other half to the gild treasury. A workman who offended three or four times was expelled from the craft. Deceitful devices, such as placing better wares on the top of the bale to cover up inferior articles beneath, the moistening of groceries to make them weigh heavier when sold, and the sale of second-hand articles for new wares, were likewise punished. Persons who did these things were held in contempt. The odious terms "regrators," "forestallers," and "engrossers," were applied to those who bought low, and, without adding to the value of an

article, sold it at a higher price; to those who bought their supplies secretly, before they had been offered for sale in the open market; and to those who attempted to corner the supply of a necessary article. Yet such devices are all too frequently considered marks of business acumen and enterprise at the present time.

The craft authorities prohibited night work in order to prevent fraud, because the gild-wardens did not inspect work at night, and because the noise of manufacture disturbed the slumbers of the neighborhood. For example, the gild of spurriers forbade night work that no one might have the opportunity to "introduce false iron, and iron that has been cracked, for tin," and to prevent similar practices in the trade. They also observed that night work tended to encourage "wandering about all day," until the drunk and frantic artisans took to their work at night "to the annoyance of the sick and all their neighborhood as well, by reason of the broils that arise between them and the strange folks who are dwelling among them." There was also peril to the whole community from the vigorous way in which these drunken workmen blew up their fires until they blazed high and sent out showers of sparks. The gild regulations therefore conclude: "By reason thereof, it seems unto them (the gild) that working by night should be put an end to, in order to avoid false work and such perils." [17] Thus the desire to preserve good trade standards and avoid giving offense, rather than dread of long hours on the ground of humanitarian principles, was the guiding motive in these regulations.

The social and charitable side of the gild regulations is well illustrated by the rules of the white tawyer's gild. A money-box was provided and "if by chance any of the said trade shall fall into poverty, whether through old age or because he cannot labor or work, and shall have nothing

[17] Riley, *Memorials of London*, pp. 226 *et seq.*; trans. by Cheney, Tr. and Rp., vol. ii, no. 1.

with which to keep himself, he shall have every week from the said box, seven pence for his support, if he be a man in good repute." Dependents were also provided for thus: "And after his decease, if he have a wife, a woman of good repute, she shall have weekly for her support seven pence from the said box, so long as she shall behave herself well and keep single." A further regulation directs that "if any one of the said trade shall depart this life, and have not withal to be buried, he shall be buried at the expense of their common box."[18] There was also the obligation upon gild members to attend the vigil of a deceased member.

The duties and powers of such gild officials as masters, wardens, or stewards, extended to supervision over the work of members, preservation of order at the craft meetings, discipline of journeymen and apprentices, settlement of disputes in the trade, administration of the gild's charities, and representation of the gild before the town authorities.

Although the economic and commercial activities of the artisan's life were the chief concern of the organized craft, the gilds did not neglect religious matters. Gilds were especially dedicated to the worship of some saint, and upon the patron saint's day, as well as at the funerals of members, common religious observances were held at which members walked in procession, dressed in common suits of their craft livery. It was customary to maintain a shrine in some neighboring church where candles, purchased with sums placed in the gild-box, were kept burning. Like the Roman *collegia,* these medieval gilds had their semireligious feast-days, when all the members gathered together to dine and enjoy social intercourse.

On their surface, these behavior patterns and culture traits of medieval men suggest more ingenuousness than we observe in the economic and industrial activities of our contemporaries. Such an inference is, however, unwar-

[18] Riley, *op. cit.*, pp. 232 *et seq.*

ranted. It must be remembered that the simplicity, relative permanence, and customary rigidity of the manorial system lay behind and round about the industry of the middle ages. Men of this time were not less acquisitive than we, or more altruistic—their apparently more ethical economic attitudes were due to the need of solidarity prevailing at the time. Moreover, it should be remembered that the "foreigner" was not protected against fraud. It was good form to sell inferior goods to distant customers.[19]

3. The Decline of the Craft-Gilds

The medieval gilds performed a great service for the advancement of industrial and social organizations. The middle-class population of Greece and Rome had been demoralized by the disproportionate growth of a class of large landholders on the one hand, and a great class of agricultural slaves or serfs on the other. It was not until the rise of medieval gilds that the middle class again appeared in the social organization of Western Europe. Within the protective shelter of the merchant and craft-gild organizations, there gradually "grew up a wide middle class of opulent traders and comfortable craftsmen," which brought about the transformation of feudal society into the modern society.[20] This middle class has been an important factor in securing the economic and social stability of our contemporary civilization. Before the rise of the gilds, there was no such class. Powerful feudal nobles, with their predatory practices, made the age one of violence and insecurity. There was no strong national government to protect the interests of individual artisans and traders. Gradually the gild organization won power with which to protect the interests of the commercial and industrial classes, and brought into being the "bourgeoisie."

[19] Hamilton, W. H., *Current Economic Problems*, 1923 (revised ed.), pp. 77–83.

[20] Ashley, *op. cit.*, vol. ii, pp. 101, 168.

The medieval period was one in which society was permeated with moral conceptions of the obligation to do good work and the dignity of labor, conceptions quite foreign to antiquity. Ashley points out that the later middle ages was a time "when elementary conceptions of good and honest work needed to be driven into the general conscience by minute rules vigorously enforced; when what was required was discipline, rather than spontaneity."[21] Hence the craft-gild regulations governing quality and standards of production were of immense moral as well as practical value in helping to stabilize the then chaotic condition of manufacturing industries. These rules helped in considerable measure to solve the difficult problems raised by the conflict of interests of consumers and producers. Contemporary competition tends to sacrifice the welfare of the producer on the assumption that the workman can live if only articles are cheaply enough produced. As a contrast to this laissez-faire attitude, happily a passing phase of the social conscience, the ideal of the craft-gild was to combine with good quality and a fair price to the consumer good working conditions for the producing class.

But no human institution can persist indefinitely without modifications in structure and function that permit adaptation to changing social interests and external conditions. We have seen how the gild merchant gave place to the craft-gild in the life of English towns. Now the craft-gild was similarly to be superseded by new forms of industrial organization better adapted to the new conditions which grew out of the expansion of industry to national proportions, and the extension of commerce to the New World. The craft-gild was "in its essence a system of control,"[22] and its restrictions, which sought only the protection of gildsmen, inevitably worked some harm to outsiders. Further than this, the protective legislation itself

[21] Ashley, *op. cit.*
[22] *Ibid.*, p. 167.

tended to become a restraining factor which injured the future prospects of the very system it was designed to foster. Personal initiative was crushed, and enterprise in adopting new inventions and introducing improvements was stifled. So we discover that the normal succession of the grades of apprentice, journeyman, and master craftsman, was gradually broken in upon; for not all of those who started as apprentices might hope to attain the highest industrial ranking. There was a numerically increasing class of workmen who were destined always to remain employees in the shop of some master craftsman. By the fourteenth century, a true "working-class" had arisen.[23] The growth of this industrial proletariate was the consequence of a variety of causes not yet completely understood. But the main factors responsible for the decline of the English craft-gilds with which this phenomenon was associated were: injurious regulation of internal affairs; a change in the location of manufacturing industries; and increasing control of economic activities by the central government.[24]

Internal demoralization. The selfish desire of those who were prominent in the craft to secure a monopoly gradually gained such ascendancy that gild regulations became injurious. Almost prohibitive fees were charged to all who desired to enter the craft and receive the privileges gild members enjoyed. In some cases the master craftsmen pursued a deliberate policy of exclusion. In 1480, there was a plea for the reduction of excessive fines assessed on apprentices who entered the mercers' gild of Shrewsbury. In 1531, Parliament limited the entrance fee to two shillings and sixpence, and the fee at completion of apprenticeship to three shillings and fourpence. The town council of Oxford enacted, in 1531, "that no occupation for crafts within the

[23] Ashley, *op. cit.*, p. 102.

[24] Cheney, *op. cit.*, pp. 147–161; see also Kramer, S., "The English Craft Gilds and the Government," *Studies in History, Economics and Public Law*, vol. xxiii.

town of Oxford and the suburbs of the same shall take of any person that shall come to be brother of their crafts above the sum of 20s.; and if the same craft or occupation take any more than the same 20s., that then the same occupation or craft to forfeit to the use of the town coffers, 40s." [25] Another irksome restraint upon individual initiative was the requirement that the term of apprenticeship be rigidly fixed at seven years. The whole situation was further complicated by the gilds' struggle with aliens, and the increasing difficulty of suppressing disorder among apprentices. There are instances in which master craftsmen required their apprentices at the time of indenture to take oath that, when they completed the period of apprenticeship, they would not set up an independent establishment. This regulation was obviously designed to curb the competition which would inevitably arise if the number of independent shops should increase. Then it was not a period of great business enterprise, so that no doubt the mere lack of initiative, combined with inability to procure capital, prevented a large element from passing through the stage of journeyman and rising to master craftsmanship.

These various conditions must have helped to create a sort of class-consciousness among the wage-earning artisans, for we find the journeymen organizing themselves into "yeomen gilds," or "journeymen gilds." Between 1383 and 1696, there were such associations among the cordwainers, tailors, blacksmiths, carpenters, drapers, ironmongers, founders, fishmongers, cloth-workers, and armorers of London. We also find these organizations among the weavers in Coventry, the tailors in Exeter and Briston, and the shoemakers in Oxford.

Although there was at first natural opposition to the new societies on the part of masters,—an opposition sanctioned and supported by the town authorities,—in the course of time they received recognition and came to oc-

[25] *Records of Oxford*, 107, quoted by Ashley, *op. cit.*, p. 105.

cupy a somewhat subordinate position in a number of different crafts. Like the older craft-gilds, they gained the right to hold meetings, have officers, possess a livery of their own, hold feasts, and administer charitable funds for their members. It was common to have written agreements which defined the relations of the yeomen gilds and the craft-gilds. For example, the craft of blacksmiths of London granted certain privileges to "the brotherhood of yeomen" in 1434. But the similarity of the journeymen gilds to the craft-gilds is confined to points of organization, for they enjoyed no general control over industry like the craft-gilds. Ashley comments upon the fact that the London ordinances give evidence of the existence of common agreements among journeymen not to work, in this respect exactly of the same nature as modern strikes.[26] For example: "Whereas, heretofore, if there was any dispute between a master in the trade and his man (vadlett), such man has been wont to go to all the men within the city of the same trade; and then, by covin and conspiracy between them made, they would order that no one among them should work or serve his own master, until the said master and his servant man had come to an agreement; by reason whereof the masters in the said trade have been in great trouble, and the people left unserved; it is ordained, that from henceforth, if there be any dispute moved between any master and his man in the trade, such dispute shall be settled by the wardens of the trade. . . ." [27]

While this process of class differentiation proceeded, within the old craft-gilds, to separate the master craftsmen from the journeymen, changes were also taking place within the group of master artisans themselves. Masters in the same trade came to have unequal powers and positions. The wealthier craftsmen gained a larger share in the administration of the affairs of a gild than their humbler

[26] Ashley, *op. cit.*, pp. 103–104.
[27] Quoted by Ashley, *ibid.*

colleagues. In the larger London companies, the more well-to-do masters possessed the means to purchase the expensive suits of livery worn by members on public occasions, and so came to be called "of the livery," in contrast to those "not of the livery."[28] This distinction became an accepted sign of class or station in the company as early as the close of the fifteenth century. This aristocratic tendency is further seen in the practical administration of affairs of the wealthier companies by a smaller, exclusive group of masters, often called the "Court of Assistants." Members of this body enjoyed greater power and privileges than the rest, and with the wardens and officials executed the important prerogatives of gild government. By the end of the sixteenth century, the old democratic organization of the gild, under which journeymen had participated in some of the minor elements of membership and looked forward to full participation when they should become masters, and according to which master craftsmen were on an equality in gild counsels, had given place to an aristocratic organization based on class-interests and wealth. The gilds had become close corporations, controlled by and in the interest of a comparatively small group that subordinated craft-interests to the selfish desire to perpetuate itself.

External influences. One evidence of the growing power of the central government in England is seen in its interference with internal economic activities. As time passed, the craft-gilds were subjected to increasing governmental interference. The exclusiveness of the later organizations, the complaints of the people, the desire to provide workmen with sufficient employment, and other influences, combined to encourage legislative control by the government.[29]

This intervention by the government in craft-gild concerns may be traced through a series of acts beginning with

[28] A spirit of business enterprise was found among this new class of business men in the great livery companies.

[29] Cunningham, W., *Growth of English Industry and Commerce*, pp. 506–525.

that of 1388, which demanded detailed information of the gild system; the act of Henry VI in 1437, which provided for registry of gilds before justices of the peace; the act of Henry VII in 1503–1504, which set in authority over the craft statutes the highest executive officials of the crown, and empowered them to settle craft disputes; the acts of Henry VIII, in 1531 and 1537 respectively, which forbade the membership fee to exceed twenty shillings, and provided penalties for masters who forced their apprentices to take oath not to set up independent establishments after their period of indenture had elapsed; the drastic act of Edward VI in 1547, which confiscated for the use of the crown all property of the purely social and religious gilds and that part of the property of the craft-gilds used for religious purposes;[30] and the "Statute of Apprentices," in the year 1563, during the reign of Queen Elizabeth, which remained a law for 250 years.[31]

The Elizabethan statute of apprentices, while primarily a reënactment of previous statutes, extended to all industry and made general certain conditions and methods of production which had first been formulated by the craft-gilds. Certain features of the old system had improved the quality of product to such an extent that they had commended themselves to all observers, and it was but natural for the government to require their introduction into new industries which were growing up outside the sphere of craft control. This famous statute in the first place made labor compulsory, and required justices of the peace to meet annually in each locality to fix the rate of wages for every kind of industry; in the second place, every person who engaged in any trade was required to serve a seven years' apprenticeship; in the third place, the working day was set at twelve hours in summer, and while daylight lasted in winter; and in the

[30] Gibbins, *op. cit.*, pp. 207–208.

[31] Kramer, *op. cit.*, pp. 40, 45, 61, 78–79, 85, and 88–123; also Cheney, *op. cit.*, pp. 154–159.

fourth place, except for piece-work, all engagements were to be for the term of a year, with six months' notice in case of close of contract by either party.

It is evident from this series of acts that the exclusive control of industry was gradually passing away from the craft authorities, and that the government undertook to regulate the relations of masters to journeymen and apprentices. Yet economic historians find there was no violent break in the continuity of craft activity caused by these acts,[32] but rather a gradual transformation, due to slowly acting economic causes which have been previously mentioned and which we shall subsequently outline.

4. The Rise of the Domestic System

We have mentioned the growth of a class of wage-earners within the gild organization. Outside the pale of craft-gild control, there had always been artisans who desired to work unhindered by the requirements of gild membership, who had practised the deceitful methods condemned by the craft authorities, or who had prospered because they could adopt new methods and devices of manufacture which the conservative gild officials discouraged. There is mention of the existence of this class of workmen in ordinances of the time, and through the fifteenth and sixteenth centuries we find the efforts of gild authorities to prohibit them from setting up business in towns, unless they had the approval of craft officials, and their attempts to levy fines upon masters who engaged as journeymen newcomers who had not paid their dues were aided by municipal and national governments. All signs point to a considerable increase in numbers of the labor class.

The spread of industry to the country. The unorganized element of the working class outside the gilds carried on its

[32] Ashley, *op. cit.*, p. 155, and Kramer, *op. cit.*, p. 86.

industry chiefly in the small market-towns and villages bordering on the larger towns of London, Norwich, and York. The fact seems to have been that industry spread from the towns, where gild regulations had been irksome, to the country, where freedom from these obstacles might be enjoyed. As early as the fourteenth century, weavers are found carrying on their trade in villages. About the end of the fifteenth century, the growth of this rural industry received great impetus from the introduction of home-manufactured woolens. Cloth began to be produced in accordance with a new system of industrial organization, a kind of organization which economic historians have considered distinctive enough to be characterized as a separate stage in the development of industry. Such marks of the older handicraft system as the small master artisans with their journeymen and apprentices still remained, and the work was still carried on in the artisan's shop, generally with his own tools, but raw materials were usually obtained from a middleman of some sort, and the finished product was always given over to the latter. In this way, the domestic system took from the worker all opportunity of making a profit. The "domestic system," as it is called,[33] was therefore the first step away from the handicraft system, that ideally normal stage of the workman's complete control over all steps in the process of production, and it was the first step towards the modern division of labor which culminates in the "factory system" of to-day.

Thus there arose in woolen manufacture under the domestic system of industry a class of merchants or manufacturers who are spoken of as "clothiers," or "merchant-clothiers," in the records of the time. They purchased the raw material and gave it out to the carders or combers, spinners, weavers, fullers, and others, who worked in their home-shops in the rural hamlets. After the articles were completed, these middlemen-employers paid the master

[33] Ashley, *op. cit.*, pp. 219–220; Seligman, *op. cit.*, pp. 92–93.

weavers or other craftsmen who had worked up the raw wool, and, gathering the finished material from the countryside, disposed of the product. Gibbins says:

"This wool was brought home and sorted, then sent out to the handcombers, and on being returned, was again sent out, often to long distances, to be spun. It was, for instance, sent from Yorkshire to Lancashire, and gangs of packhorses laden with wool were always to be met plodding over the hills between these two counties. In the same way, silk was sent from London to Kendal and back. When spun, the tops, or fine wool, were entrusted to some shopkeeper to 'put out' among the neighbors. Then the yarn was brought back and sorted by the manufacturer himself into hanks, according to the counts and twists. The handweavers would next come for their warp and weft, and in due time bring back the piece, which often was sent elsewhere to be dyed. Finally, the finished cloth was sent to be sold at the fairs, or at the local 'piece halls' of such central towns as Leeds or Halifax."[34]

In this way, those steps in the process of production which immediately preceded actual manufacturing manipulation and immediately followed the completion of separate articles by this process were taken from the control of the workman and appropriated by a separate class. In a few cases the small manufacturer still purchased his own materials and delivered the finished article to his customer, or took it to town on market days. Here we have a real employer class who provided the raw material, furnished much of the money capital, and undertook to sell the completed goods. Naturally, the conditions of domestic manufacture varied widely in different regions. In general, the cottage workman was more independent in the northern than in the southern section of England. The capitalistic control of industry in the south involved not merely pro-

[34] *Op. cit.*, pp. 338–339.

vision of raw materials by the "merchant manufacturer," but in some cases, such as in stocking and silk manufacture, went so far as to extend to the ownership of the artisan's tools. In this way the rise of the domestic system in the villages, beginning in woolen manufactures and soon extending to other trades, undermined the gild control of industry and slowly prepared the way for our modern factory system.

The spread of woolen manufacture. An important element in the domestic system was the existence of a number of small master-manufacturers who were entirely independent and combined small farming with their industrial activities.[35] Defoe has drawn for us an interesting picture of life under the domestic system as it existed near Halifax, in Yorkshire. "The land was divided into small inclosures, from two acres to six or seven each, seldom more, every three or four pieces of land having a house belonging to them; hardly a house standing out of speaking distance from another. We could see at every house a tenter, and on almost every tenter a piece of cloth or kersie or shalloon. At every considerable house there was a manufactory. Every clothier keeps one horse at least to carry his manufactures to the market; and every one generally keeps a cow or two or more for his family. By this means the small pieces of inclosed land about each house are occupied, for they scarce sow corn enough to feed their poultry. The houses are full of lusty fellows, some at the dye-vat, some at the looms, others dressing cloths; the women and children carding or spinning; being all employed, from the youngest to the oldest." [36]

This transition stage of industry, from the more or less stable handicraft to the more or less stable factory system of to-day, is so interesting that two more quotations will

[35] Toynbee, A., *The Industrial Revolution*, London, 1902, p. 53.
[36] *Tour*, vol. iii, pp. 144–146.

not be amiss. According to one description [37] of life in the northern counties of England:

"The village combined agricultural with industrial occupation; the click of the loom was heard in the cottages; the farmyards and the fields, the cottages and the allotment gardens, made a delightful picture of rural life. The land was mainly freehold; the farmers were of the yeoman class, and not infrequently combined the calling of a clothier or master manufacturer along with that of farming. The farmer's wife, although born with a silver spoon, was industrious and thrifty; with her own hand she would churn the butter, make the cheese, cure the bacon and ham, or bake the bread; her daughters would assist in spinning the yarn, or knitting the stockings; and from the cloths woven under their supervision they would, with the assistance of the village dressmaker, make their own dresses. If you entered one of the cottages, you would find the master of the house in the 'chamber,' sitting at the loom, busy throwing the shuttle, weaving a piece of cloth; his daughter would be sitting at the wheel, spinning weft; and the good wife would be busy with her domestic duties. One son would be out working on the land for the farmer; another would be working on the weaver's allotment. Down in their little allotment plot, they grow their own vegetables, and a little crop of oats which they have ground into oatmeal for making their porridge; they also keep a pig or two, and provide their own bacon and ham. They are on good terms with the master-manufacturer—that is, the gentleman who gives them warp and weft to weave into cloth. . . . Their chief articles of food are produced from the land immediately surrounding them. Their means of subsistence and comfort are not to be computed by the amount of their earnings in money-wages, but the produce of their bit of land, and the ease and cheapness with which they can obtain other necessities."

[37] Illingworth, T., *Distribution Reform*, London, 1885, p. 81.

This simple system was pretty well diffused throughout the country-side, and the conditions of work just mentioned show that the wage-earning class enjoyed many comforts and advantages which have been denied them under the factory system. On this point Gibbins remarks:

"For one thing, they still lived more or less in the country, and were not crowded together in stifling alleys and courts, or in long rows of bare, smoke-begrimed streets, in houses like so many dirty rabbit-hutches. Even if the artisan did live in a town at that time, the town was very different from the abode of smoke and dirt which now prevails in manufacturing districts. It had a more rural character. There were no tall chimneys belching out clouds of evil smoke; no huge, hot factories with their hundreds of windows blazing forth a lurid light in the darkness, and rattling with the whirr and din of ceaseless machinery by day and night. There were no gigantic blast-furnaces rising amid blackened heaps of cinders, or chemical works poisoning the fields and the trees for miles around. These were yet to come. The factory and the furnace was almost unknown. Work was carried on by the artisan in his little stone or brick house, with the workshop inside, where the wool for the weft was carded and spun by his wife and daughters, and the cloth was woven by himself and his sons. He had also, in nearly all cases, his own plot of land near the house, which provided him both with food and recreation, for he could relieve the monotony of weaving by cultivating his little patch of ground, or feeding his pigs and poultry." [38]

5. The Agricultural Revolution

Viewed against its true historical background, the rapid growth of cities in recent times is not such a disturbing phenomenon as our study of Greek and Roman experience

[38] *Op. cit.*, pp. 327–328.

with urban increase might lead us to expect. For, parallel with it, there has been an accelerating improvement in agricultural methods. Hence we are not in such immediate danger of experiencing an excess of consumptive activities over productive activities as were the peoples of ancient Greece and Rome. The economic and industrial foundations of the civilization of Western Europe possess far greater breadth and depth than those of ancient civilizations.

We must remember that the predominant factor in the agricultural economies of Greece and Rome, for the period we have studied, was slave cultivation. It was therefore inevitable that technique should be more or less primitive, and the results inadequate and wasteful. The primitive fertility of the soil was used up, and human as well as natural resources were exploited to the fullest extent. We have seen how it became impossible to provide sufficient food for the great metropolitan districts of antiquity largely because of these same inefficient agricultural methods, and we have observed that the situation was complicated by an unwise public policy which insisted on the necessity of providing grain for the urban populace at reduced rates. Meanwhile, the state neglected to encourage manufacturing industry, practically the only activity which might be relied upon to give stability to an unbalanced national economy, and provide means with which to pay for importations of food-stuffs. This deplorable situation was still further complicated by the traditional obstacles of preference for agricultural occupations, and the tendency to despise all those who were engaged in commerce and manufacturing.

Contrast with this state of affairs the more wholesome and rational economy of to-day. Agriculture is now based upon the productive labor of free men in competitive and cooperative activity. The application of capital on a large scale has permitted an intensive type of cultivation. Exact methods have been so widely applied to the whole range

of agricultural economy that it has become a science in itself. Modern governments, especially the Federal Government of the United States, have used their powers to stimulate, encourage, and protect agriculture. Moreover, at the same time that agriculture has been developing a highly organized technique, the industrial activities of modern states have experienced an unprecedented expansion. The combined effect of these tendencies has made it possible for a comparatively small force of labor to obtain from the cultivation of the soil an increasingly greater supply of foodstuffs with which the growing populations of urban and industrial centers can be easily maintained. In other words, the modern growth of cities is not necessarily an unhealthy sign, for the attendant growth of manufacturing industry and agricultural activity produces the necessities to satisfy the increasing demand in a perfectly natural manner.

From what has just been said, the reader will appreciate the importance of a brief study of modern agricultural evolution in order to gain a clear understanding of the historical background of social economy. We shall, therefore, outline rather briefly the main influences and factors in the revolution of English agriculture during the eighteenth and nineteenth centuries.

The agricultural revolution in England has been selected for study in preference to the experience of other nations because the factors responsible for its coming may be readily understood. In England the transformation of agricultural economy meant three things: the concentration of ownership and control of lands in a diminishing body of proprietors; the enclosure of common lands which had for centuries been the chief means of support of small farmers; and the consequent reduction of rural workers to the status of a wage-earning, agricultural class, along with an exodus of population from the country.[39] But before we

[39] Ogg, F. A., *Social Progress in Contemporary Europe*, New York, 1912, p. 63.

examine the steps in this important transition, it will be well to make a brief survey of its historical backgrounds.

Sheep-raising and enclosures for pasturage. During the early middle ages, the prevailing economic activity was agriculture. What little manufacture was necessary to supply the needs of the people was carried on by those who tilled the soil.[40] We have already had occasion to trace the rise of a separate manufacturing class, but it should be remembered that agriculture was the chief occupation of the English laboring classes until after the middle of the eighteenth century. Of the three great stages which mark its evolution, agriculture had passed through the first stage, that of the old open-field husbandry of early times, and had entered upon its second stage, that of convertible husbandry. At this stage the land is used alternately during a term of years for pasture and for crops—a system which necessitates enclosure of arable land by fences or hedges. This, then, was the condition of English agriculture at the time we are now considering, the period which preceded the agricultural revolution.

For a century after 1272, the landowner remained also a cultivator, and lived upon his land. But this method of cultivation gradually disappeared after the Great Plague (1348). The landowner became a mere rent-receiver, although the great feature of this transformation was the growth of the practice of enclosure, according to which large tracts of farm land were turned into pasture for sheep, and fenced accordingly.

Thus it was that after the Great Plague and on through the sixteenth century the really significant changes in agriculture were to be found in the uses to which land was put, rather than in methods of tilling the soil. We have had occasion to mention the steady growth of home manufacture of woolens. This provided a considerable home market, in addition to the existing market among the cloth

[40] Ashley, *op. cit.*, p. 99.

manufacturers of Flanders, for the products of sheep-farming. Moreover, labor had now become so costly that use of the land in pasturage, which required comparatively little labor, was more economical than ordinary tillage. Hence, large tracts of land were taken out of cultivation and converted into pastures for sheep-raising. Yet apart from pasturage, cultivation was still carried on in the old ways.

All these changes occurred against the background of rising prices due to an increase in the amount of precious metals occasioned by mining operations in America, the debasement of the coinage, increased rentals of properties in improved wheat production, and the rise of wages. Corn prices rose more rapidly than wool prices, but the cost of production of wool was less because it took less labor; moreover, no fertilizer was needed, hence enclosures for pasturage increased in the English midlands.

The agrarian situation created by the system of enclosures in the sixteenth century was a serious one. It had become so profitable for landowners to go in for sheep-farming that they turned their arable land into pastures, with small consideration for the interests of the tenant class. Small tenants were summarily evicted, so that "in this way it comes to pass that these miserable people, men, women, husbands, orphans, parents with little children, are all forced to change their seats, without knowing where to go." [41] The rents of the larger tenants were raised to ruinous figures, in one recorded instance from £4 to £16 a year.[42] Finally the large landowners took the common lands of the poor by enclosure.

The enclosures made at this time were of three kinds: the enclosing of the lord's demesne; the enclosing of certain strips of land which belonged to the lord of the manor,

[41] More, Thomas, *Utopia*, Morley's ed., p. 64.

[42] Latimer, *First Sermon before Edward VI*, cited in Gibbins, *op. cit.*, p. 213.

but which were intermixed with the strips of tenants in the open fields; and the enclosing of common fields, and even the tenant's own strips.[43] The first and second kinds of enclosures were within the right of the lord, but the last was frequently abused, and convenient pieces of tenants' strips were sometimes taken. It was the third type of enclosure, however, that gave the most trouble and produced the greatest injustice and misery among the people.

Gibbins presents interesting evidence of the results of enclosing, taken from popular songs and parliamentary documents.[44] In 1536, a petition complains of the new use to which land is put, which "hath not only been begun by divers gentlemen, but also by divers and many merchant adventurers, cloth-makers, goldsmiths, butchers, tanners, and other artificers, and unreasonable covetous persons which doth encroach daily many farms, more than they can occupy, in tilth of corn—ten, twelve, fourteen, or sixteen farms in one man's hands at once . . . in time past there hath been in every farm a good house kept, and in some of them three, four, five, or six plows kept and daily occupied to the great comfort and relief of your subjects, poor and rich. But now, by reason of so many farms engrossed in one man's hands, which cannot till them, the plows be decayed, and the farmhouses and other dwellings, so that when there was in a town twenty or thirty dwelling-houses, they be now decayed, plows and all the people clean gone, and the churches down, and no more parishioners in many parishes, but a neatherd and a shepherd, instead of three score or four score of persons."[45] Sir Thomas More speaks of the increase of pasturage in England, "by which sheep may be said to devour men and to unpeople towns as well as small villages." He proceeds to explain the terrible increase of pauperism as due to the

[43] Gibbins, *op. cit.*, pp. 213–214; Ashley, *op. cit.*, pp. 285–287.
[44] *Op. cit.*, pp. 215–218.
[45] *Rolls House M.S., miscellaneous*, second series (Froude), p. 854.

enclosures, for the small farmers "would willingly work, but can find none that will hire them, for there is no more occasion for country labor, to which they have been bred, when there is no arable ground left."[46] According to Froude,[47] "the absorption of the small farms had assumed proportions mischievous and dangerous. . . . The great cattle-owners, in order to escape the sheep statutes, held their stock in the names of their sons or servants; the highways and villages were covered, in consequence, with forlorn and outcast families, now reduced to beggary, who had been the occupiers of comfortable holdings; and thousands of dispossessed tenants made their way to London, clamoring in the midst of their starving children at the doors of the courts of law for redress which they could not obtain." A commission appointed in 1548 brought back a report of the distressing agrarian situation. The complaints are found voiced in ballads, such as the following:

> The towns go down, the land decays,
> Great men maketh now-a-days
> A sheep-cote in the church.[48]

This depopulation of certain sections of rural England and the accompanying trend of population cityward brings to mind the somewhat similar phenomena in Greece and Rome. But the analogy is subject to the qualifications mentioned in the opening paragraphs of this section, for we shall see that the worst consequences of the process of land consolidation were largely offset by improvements in agricultural technique.

Improvements in agriculture. Agriculture was still the greatest industrial occupation of England in the sixteenth century. Competitive rents were for the first time coming

[46] *Op. cit.*, pp. 64–65.
[47] *History*, iv, p. 353.
[48] *Now-a-dayes*, a ballad (Ballad Society), lines 157–160; quoted by Gibbins, *op. cit.*, p. 216.

into use, and are an indication of progress. The capital invested in land was increasing, the breeding of horses and cattle advanced, and the use of natural fertilizers became more general. New vegetables were introduced into the country by refugees from the Continent.

Enclosures presently came to be made for the purpose of carrying on improved methods of tillage, rather than for the sole sake of sheep-raising. There was a gradual revival in arable farming, and as Gibbins says, "the special, characteristic feature of the seventeenth century is the utilization of fallow for roots, . . ." [49] Writers on agricultural subjects appeared and considerable attention was paid to different kinds of manures.[50] In the eastern counties the fens were drained, and the large districts thus reclaimed increased agricultural prosperity. Winter roots (turnips) came into use, and in the eighteenth century there was an extension of artificial pastures and an increase in the use of clover, sainfoin, and rye-grass.

The improvements made in fodder were naturally followed by gains in the art of stock-breeding. From the fourteenth to the start of the eighteenth century, a fatted ox seldom weighed much over four hundred pounds, whereas the eighteenth-century fatted ox often weighed more than eight hundred pounds.[51] Young [52] estimates the value of stock at nearly £110,000,000 between 1700 and 1777. The increased numbers of stock involved production of larger quantities of manure, and this in turn encouraged a more intelligent use of fertilizers.

Agriculture was now carried on with a view to the market. The old practice of tillage for subsistence alone had largely given place to competitive methods.[53] Yet survivals of primitive culture were still to be seen in the common-

[49] P. 267.
[50] Cunningham, *Growth of English Industry and Commerce*, vol. II, p. 545.
[51] Toynbee, A., *The Industrial Revolution*, London, 1902, pp. 43–44.
[52] *Northern Tour*, vol. iv, pp. 340–41; *Eastern Tour*, vol. iv, p. 455.
[53] Cunningham, *op. cit.*, pp. 109–110.

field system which existed in sections of Hallamshire and Yorkshire.[54] "Never," says Young, "were more miserable crops seen than the spring ones in the common fields; absolutely beneath contempt." [55] It appears that there were three causes for this deficient stage of tillage: first, under the common-field system, no proper rotation of crops was possible, and consequently the same course of cropping continued year after year; second, much time was lost by laborers and cattle "in traveling to many dispersed pieces of land from one end of a parish to another"; [56] and third, there were perpetual quarrels over the rights of pasture and boundaries. These reasons make clear why there was a close connection between the practice of enclosing and improved methods of agriculture.

The new period of enclosures and the agrarian revolution. The advent of capitalism and the introduction of invention seem to have been the two main agencies which precipitated the agrarian revolution of the eighteenth century.[57] Yet it is a highly significant fact that while these agrarian changes were making possible the support of growing town populations, and at the same time stimulating the drawing-off of surplus country population to the cities, the industrial revolution and the rise of the factory system were encouraging the dislodgment of large numbers of people who had always lived by agriculture. It is therefore clear that the two great revolutions in methods of production interacted one upon the other, and their very conjunction in time helped to effect the consummation of the different tendencies that were at work in each group.

Better cropping, improvements in the art of cattle-breeding, and the introduction of machinery, were important elements in the new agriculture which inevitably involved the use of capital in larger quantities than ever

[54] Young, A., *Northern Tour*, vol. ii, 1.
[55] *Southern Tour*, ed. of 1772, p. 384.
[56] *View of the Agriculture of Oxfordshire*, p. 100.
[57] Ogg, *op. cit.*, p. 69.

before, and necessitated large-scale cultivation. The tendency towards urban growth, which we have mentioned in connection with the earlier progress of industry, was enormously accelerated by the rise of great industrial centers, in consequence of the appearance of the factory system and machine production. The farms of the older sort, cultivated for the support of local tenants, gave way before the growing urban demand for foods, and small holdings were enlarged and converted into manufactories of grain and meat. The average husbandman of the eighteenth century possessed an amount of capital and land wholly inadequate to supply the increased demand. The imperative need for more efficient methods revived the practice of enclosures, and the small farmer lost his rights in the common lands of the parish, and was speedily reduced to the condition of a mere country wage-earner. The new agriculture, therefore, involved the virtual disappearance of the cottager class.

The decay of the yeomanry. The new movement for enclosure set in early in the second half of the eighteenth century and proceeded with a rapidity and boldness that surpassed that of the earlier period. Between 1760 and 1843, fully seven million acres were enclosed. There were good arguments advanced for enclosure. The old subdivided and open-field system of cultivation was uneconomical. Enclosure meant redistribution of the open fields and waste-land and meadows of the parish among former possessors of land-rights in a manner that would secure to each person one continuous and enclosed tract equivalent in area to his former scattered holdings in the open fields, together with the rights in meadow and waste-land associated with his former holding.

Unfortunately, this redistribution of agricultural holdings, which had much to commend it, was accomplished in a most iniquitous manner. The process of enclosure was effected by compulsion, as well as by consent. The author-

ities of the parish made the change themselves, and whenever it was possible secured the unanimous consent of those who enjoyed land-rights within the parish. In practice, it was difficult to secure general consent, and the usual procedure therefore involved procuring the assent of the possessors of four-fifths the aggregate value of the land concerned, and then the passage of a special act by Parliament which authorized the enclosure, and forced the dissenting minority to agree. Although every person deprived of his former rights received compensation either in land or money, the new arrangement usually was unfavorable to the small holder, for the enclosure measures were, as a rule, drawn up by large landholders and persons of influence in the localities concerned. Moreover, the economic situation of the person of small means was still further injured by the disappearance of the old by-employments of home-manufacture, which had contributed so much to make the lot of the farmer-domestic manufacturer a comfortable one. This situation came about because the domestic system, as we shall soon see, was giving way before the factory system.

The decay of the English yeomanry, unlike the somewhat similar decline of the Greek and Roman yeomanry which had also involved transfer of the property of one class to another, was a sudden and a silent revolution. Toynbee says: "A person ignorant of our history during the intervening period might surmise that a great exterminatory war had taken place, or a violent social revolution, which had caused a transfer of the property of one class to another. But though the surmise in this particular form would be incorrect, we are nevertheless justified in saying that a revolution of incalculable importance had taken place,—a revolution, though so silent, of as great importance as the political revolution of 1831." [58]

[58] *Op. cit.*, p. 59.

The class thus demoralized and driven from the countryside was composed of the small freeholders who had formed one-sixth of the population of England down to the close of the seventeenth century. "This sort of people have a certain preëminence and more estimation than laborers and the common sort of artificers, and these commonly live wealthily, keep good houses, and travel to get riches. They are also, for the most part, farmers to gentlemen, or at the leastwise, artificers; and with grazing, frequenting of markets and keeping of servants, do come to great wealth, insomuch that many of them are able to, and do, buy the lands of unthrifty gentlemen, and often sending their sons to the schools, to the Universities, and to the Inns of Court, or otherwise leaving them sufficient lands whereon they may live without labor, do make them by these means to become gentlemen. These were they that in times past made all France afraid." [59]

> The law locks up the man or woman
> Who steals the goose from off the common;
> But leaves the greater villain loose
> Who steals the common from the goose.

So runs a protest in current doggerel of the time. But the decay of this sturdy class of small farmers was not a result of the practice of enclosure alone; there were other influences at work. Among them Gibbins mentions the "Statute of Frauds" of 1677, according to which all holdings in land not created by deed were treated as tenancies at will only, a law which weakened the position of the yeomen. Then the custom of primogeniture and strict settlements tended to limit the subdivision of land into tracts which small holders could afford to buy. Again, the ever-increasing poor-rates of the eighteenth and nineteenth centuries became a burden which small landholders had

[59] Harrison, *Description of England*, bk. III, ch. iv, page 13; quoted in Gibbins, *op. cit.*, pp. 276–277.

to bear. Farm laborers could not maintain themselves on the wages paid by large employers of agricultural labor, and so it resulted in transferring the burden of support by taxation to the shoulders of the yeoman class.[60] Finally, wages were falling and rents rising.

By 1845 the agricultural revolution had run its course, and the process of readjustment had created "three great classes of men engaged in the English agriculture of later times and of to-day: (1) the landed proprietors, who let out their land in large quantities to farmers in return for as considerable a rental as they can obtain; (2) the farmers, who, possessing no proprietary interest in the soil and no direct community of interest with either the landlords or laborers, carry on agricultural operations upon these rented lands as capitalistic, profit-making enterprises; (3) the agricultural laborers who neither own land nor manage it, but simply work under orders for weekly wages, as do the operatives in the factories."[61]

Agricultural machinery. Although the history of English agriculture gives us a condensed picture of the agricultural revolution in so far as it has involved concentration of ownership, enclosure of lands, and the creation of a rural wage-earning class, it is to America we must turn for a view of the effects of agricultural machinery upon rural life. The vast fertile plains of the central and western parts of the United States afforded an opportunity for the application of machinery to agriculture on a scale undreamed of by English cultivators.

The mention of agricultural machinery brings us to contemporary times and face to face with some of the fundamental changes in culture occasioned by the invention of power-driven machinery and its application to save labor and human effort. These subjects are reserved for treatment in a later chapter after we have reviewed the histor-

[60] Gibbins, *op. cit.*, pp. 276–283.
[61] Ogg, *op. cit.*, pp. 63, 72; Cheney, *op cit.*, pp. 222–223.

ical evidence of cultural change presented in this and the two preceding chapters. Before we review this evidence, however, and attempt some tentative generalizations as to the processes of cultural change, it will be well to consider another phase of the maintenance mores of medieval times—namely, poor relief. We have noted that the mores of aiding the poor were strikingly alike in Roman and Greek times. In many respects the experience of medieval England with her poor repeated the trials and errors of these earlier societal reaction patterns. In order to lay the factual basis for an understanding of collective behavior in this sphere of social interaction wherein the group attempts to support its disadvantaged and maladajusted individuals, let us now briefly review the historical facts.

6. Medieval Charity and the English Poor Law

The Roman attitude towards charity is best expressed by the words *liberalitas, beneficentia* and *pietas*. The first two terms emphasize the mood of the free and independent giver, as well as the deed and its purpose, while the last introduces the religious notes of piety and pity.[62] Contrasted with this attitude towards charity is the theory of medieval times, represented by three lines of thought. St. Bernard (1091–1153) helped to shape the idea that poverty was not as much a social state as a spiritual one. Thus, the poor were those who had taken vows of poverty. This doctrine invigorated the monastic movement and tended to make the monastery the center of charitable relief. St. Francis (1182–1226) revived the conception of charity as an ideal of personal service which should lead men to live among the poor and share their privations and misfortunes. St. Thomas Aquinas (1225–1274) associated charity with definite groups of good works, and thus established the basis in popular thought for the stereotyped form of aid

[62] Loch, *op. cit.*, pp. 80–81.

which made the giver over-conscious of ultimate reward accruing to himself in an after-life. This last doctrine destroyed the simplicity and spontaneity of the deed, and, falsifying it at the outset, gave charity the stamp of "otherworldliness."

Medieval charity. Transition from the public relief of Rome to the monastery as a center of charitable aid was accomplished by various stages. To mention only one in passing, it is sufficient to cite the establishment of the "church fund" during the second century. This fund was supported by voluntary gifts, and was used to assist the poor, provide burial, help destitute and orphaned children, and relieve other dependents. Around this charitable center the parochial system developed.[63]

Throughout the middle ages, ecclesiastical theory regarded the collection of sums of money for the relief of poor members as the primary obligation of those who administered church property. In the sixth century, it was customary to divide the revenues of the church into four portions, one for the bishop, one for the rest of the clergy, one for the maintenance of the church fabric, and one for the poor.[64] Originally in the hands of the bishop, church revenues were eventually allotted to the several parishes. It was only one more step to assign to parish priests the duty of relieving the poor. This reorganization of the ecclesiastical system, originating first on the Continent, was copied by English lawmakers in the eighth century.

When the parochial system of relief gave way, monasteries, gilds, and private almsgiving continued the work of aiding the poor. After the twelfth century, the use of the tithe appears to have ceased as an element in charity. The almsgiving of church dignitaries assumed the aspect of "gracious outpouring of their own charity," rather than

[63] Loch, *op. cit.*, p. 211.

[64] Ulhorn, *Christian Charity in the Early Church*, 1883, p. 266; and Ashley, vol. II, *op. cit.*, p. 307.

ecclesiastical obligation. Such parochial poor-relief as did exist at the close of the middle ages appears to have been furnished from a sort of "church fund."

The monasteries carried on the work that the parochial clergy did not perform. Without organization or any centralized system of poor-relief, the alms given by every monastery were entirely without relation to any other; consequently aid was given to all strangers who chose to apply, as well as to cases of local need. Under these circumstances relief was indiscriminate, and soon a professional beggary grew up and overran the land. The pauperizing effect of such almsgiving was due more to lack of unity in the administration of poor-relief than to church doctrine encouraging indiscriminate giving. In fact, Basil cautioned against giving without distinction to every beggar that asked. But this wise counsel, as well as that of others, appears to have passed unheeded.

Each monastery was a center of relief, with its almonry usually near the church of the monastery. The almoner's duty was to give alms to the needy, and to aid with especial liberality travelers, palmers, chaplains, mendicants (professional beggars), and the leprous (the sick). Outdoor relief was given to the old and infirm and to the lame and the blind who were confined to their beds. Rooms for the sick were frequently provided in the almonry. The almoner distributed to widows, orphans, and poor clerks, the remnants of meals, and the old clothes of the monks. He was thus a local visitor, as well as the agent who provided indoor relief for the sick. Ashley says of this method of poor relief: "There are . . . very strong reasons for believing that, for a couple of centuries at least before the Reformation, the English monasteries had done little for the relief of honest poverty; and that their almsgiving tended rather to foster the growth of a class of professional beggars." [65]

[65] *Op. cit.*, vol. II, p. 312.

Besides monasteries, the relief of distress was provided for by another class of institutions known as hospitals. These were charitable foundations for the care of the sick and the sheltering of destitute and enfeebled old age. They were a sort of a combination of the modern hospital and almshouse in a primitive stage of development. There were hundreds of these institutions scattered over Western Europe. These hospitals were under the administrative charge of a master or warden, several priests who assisted in the performance of religious offices, and a number of lay and religious brethren.

For a time these foundations did their work well, and grew rich and powerful from the continuous stream of fresh endowments left by the wills of wealthy persons. In time, however, they came to be regarded by their administrators as a source of income, and their attendants wasted their revenues in idleness and dissipation. Admission of the sick and needy was refused, and the heads of these houses used the property for their own advantage. But misappropriation of revenue was by no means the only abuse to which these hospitals were submitted. Scandalous methods of begging contributions were resorted to by their agents. Moreover, it was customary for the larger hospitals to offer food and lodging to all applicants irrespective of need or worthiness. "Vagabonds who lived by begging went 'from spital to spital, prowling and poaching for lumps of bread and meat.' Around the gates of Saint Bartholomew and other great foundations gathered swarms of the miserably shiftless and idle, decrepit, halt, and maimed, covered with rags and filth, like those still to be seen around the entrance to many a Continental cathedral." [66]

Crafts and fraternities furnished relief to their own members. Although many of the religious gilds did not profess to relieve bodily distress, the majority of them were accustomed to give occasional aid to needy members.

[66] Ashley, *op. cit.*, pp. 323–324.

Some gilds provided a weekly pension for indigent members sufficient to cover mere maintenance. These payments were not considered as something the members could claim in return for their own dues, like a sick-benefit, but were quite frankly regarded as a form of almsgiving that was chiefly valuable from the point of view of spiritual benefit to the giver, rather than as so much aid for the assistance of members in distress.

As the industrial and trading population increased, craft associations began to provide lodging for destitute members, and some proceeded to erect almshouses which were managed in much the same fashion as the endowed hospitals. Beginning with the religious gilds, the practice spread to the crafts, where further bequests enabled these almshouses to provide for inmates a regular weekly allowance in addition to shelter. In the case of smaller fraternities, the weekly doles appear to have been obtained by contributions furnished for each particular case, and not from endowments.

Private charity of the middle ages was chiefly indiscriminate almsgiving. The almsgiving of great prelates and nobles assumed such dimensions that it rivaled, and sometimes actually exceeded, that of the monasteries and hospitals. Food was frequently provided for scores and even hundreds of individuals. Double and triple doles were dealt out on festival days. It was customary to distribute doles to all who applied at the gates. While bequests were sometimes made by wealthy landlords for the benefit of their poor tenants, and occasionally money was left for the education of poor children, or the marriage portion of a poor girl, it was far more usual to find that a bequest was left to be distributed to the poor without any restriction. Sometimes alms were offered to all who cared to come for them.

In making charitable bequests, the dominant motive was the spiritual gain that accrued to the testator in the next world. It was thought that the prayers of the recipients

would be added to the sum of the benefactor's good works, thus laying up for him a greater heavenly reward.

In our brief survey of the poor-relief and charity of the middle ages, we have discovered that the work was entirely in the hands of the church, or under the influence of religious motives acting upon the minds of individuals. There was no attempt by the church to organize poor-relief according to a systematic plan, and the state and secular authorities made no such effort. Almsgiving by monasteries, hospitals, gilds, private persons, and by ecclesiastical and lay magnates, was the form taken by the bulk of poor-relief. This indiscriminate distribution of relief exercised a pauperizing influence, and rendered it easy for shiftless persons to get a living without work. A horde of professional beggars was created, who wandered from place to place, going the regular rounds of monastery, hospital, and festival, supported year in and year out by reckless and unintelligent giving, and increasing in numbers and boldness. Meanwhile, there were hardworking people of honest habits, and deserving poor, who found no assistance because they were too proud or afraid to go out with these shameless vagabonds.

The period of repression. The first step in governmental interference in the relief of the poor appeared under the guise of that section of the first Statute of Laborers in 1349 which attempted to prevent vagrancy by repressing it. The law sought to secure an adequate supply of labor at the rate of wages current before the "Black Death," but also declared that all persons who gave alms to "sturdy beggars" should be punished by imprisonment. It was expected that idleness would cease as soon as almsgiving to able-bodied beggars was discontinued. Throughout the fourteenth and fifteenth centuries, England enacted statutes in an effort to solve the problem of vagrancy by repression.[67]

There were successive enactments in 1360, 1376, 1388, and

[67] Nicholl, G., *History of the English Poor Law*, 1899.

during the fifteenth century. The dissolution of the monasteries during the reign of Henry VIII transferred from the control of the church to the hands of the nobles one-fifth of the lands of England. As a result, many of the poorer tenants were ruined and reduced to poverty, because the nobles were chiefly intent upon quick money-returns, and consequently sold off the farm-stock and often evicted the tenants. The suppression of the monasteries suddenly brought to an end the lavish almsgiving on which the class of professional beggars had grown to depend, and, without perhaps actually increasing the absolute amount of vagrancy, immensely aggravated the seriousness of the problem.

Earlier than this, however, the problem of poverty had assumed dimensions of gravity, because of the agrarian difficulties connected with the first period of enclosures. It was the inadequacy of the ecclesiastical system of poor-relief, or rather the lack of system in dealing with this problem, that made it necessary to incorporate into the legislation against vagabondage and vagrancy some provision for the relief of the impotent poor.[68] The Act of 1530 directed justices of the peace to license such impotent poor as could go begging, provided they did not beg outside certain set limits. If caught outside these limits, they were to be punished by imprisonment in stocks, and by whipping. All able-bodied persons caught begging were to receive punishment by whipping, and were to be returned to their place of birth, or where they had lived for the past three years. The punishments for second and third offenses were severe.

Although designed to check begging by attempting to correct the deficiencies of the first enactment the Act of 1536 provided positive measures for the relief of the poor. The mayor of every town, and the churchwardens of every par-

[68] Ellwood, C. A., "Public Relief and Private Charity in England," *The University of Missouri Studies*, 1903, vol. II, no. 2, p. 5.

ish, were directed to collect alms on Sundays and holidays for the aid of poor, impotent, sick, and diseased persons. Account of expenditures must be kept by the parish priest, and all idle children over five years of age were to be taught husbandry or craftsmanship. Able-bodied men were to be set at work. "Sturdy vagabonds" were to receive harsh punishment, and even to be put to death as felons. The revenues for this poor relief were the voluntary gifts of the people, but the giving of private alms by individuals was forbidden, and the punishment was forfeiture of ten times the amount given.[69]

This act marks a transition from ecclesiastical to secular poor-relief. It is the first instance in which the state directed how funds for poor-relief should be raised, and how they should be administered. While secular power intervened in this way, it was not to secularize relief, but rather to revitalize and organize the system of ecclesiastical relief.

In 1547, measures repressive of vagrancy were made more cruel, yet the Act of 1551 marked an amelioration in the laws relating to the helpless poor. By this act it was provided that two or more collectors of alms were to be appointed in each parish, who were to make lists of the impotent, the feeble, and the very poor, for the purpose of admonishing parishioners to contribute. Persons not contributing according to their means were to be exhorted and reproved by the bishop of the diocese.

The poor-law of Elizabeth. An approach to a compulsory poor-rate levied by civil authorities was made early in the reign of Elizabeth. In 1562 it was enacted that bishops should bind over all who refused to pay the amounts assessed by parish collectors to appear before justices empowered to assess them such sums as they thought reasonable.

By a gradual process of successive enactment, the whole system of poor-relief, which had worked so badly under

[69] Nicholl, *op. cit.*, vol. I, pp. 121–125.

church control, was transferred to civil authorities. The Act of 1572 provided for parish collectors and overseers of the poor, who should tax inhabitants for support of the poor. In 1576, stocks of raw materials were kept in each town to provide work for the poor. Able-bodied persons who refused to work were sent to the house of correction. Among other enactments, that of 1597 stands out as characteristic of the new spirit in the administration of poor-relief. Overseers of the poor were appointed in each parish to assume charge of relief, as well as to raise by taxation whatever amount of money was necessary to purchase material for labor, and to provide relief.

All the essential principles of the Act of 1597, as well as the machinery for administering relief worked out in the experience of the past generation, were incorporated in the famous Statute of 1601, the so-called "Poor Law of Elizabeth." The admirable characteristics of this law may be traced to the fact that it was the culmination of long experience, and therefore inevitably rested upon certain principles of universal validity.

By this law, recipients of poor relief were divided into three classes: able-bodied persons, those unable to work, and children. Work was to be provided for the first class upon such raw materials as flax, hemp, wool, iron, and other materials to be supplied by overseers of the poor. If any able-bodied person refused to work, he was to be punished by being put in stocks, or by imprisonment. Overseers were directed to provide necessary relief for those unable to work. For this purpose, maintenance in almshouses was commended. Emphasis was laid upon the responsibility of those near of kin; consequently children, parents, and grandparents were made liable for the support of relatives unable to work. For the third class, dependent children, provision was to be made for their apprenticeship in some craft—boys till the age of twenty-four, and girls till the age of twenty-one, or until married.

Overseers were directed to levy a tax to raise the funds required for this poor-relief. These taxes were to be collected weekly, or otherwise, and were levied chiefly upon the occupiers of real estate. When a poor parish was overburdened by its rate, aid was to be secured from other parishes in the "hundred," or county.[70]

The parish still remained the unit of poor-relief administration, for justices of the peace were directed to nominate in Easter week two or more overseers of the poor, to assume charge of the administration. Justices of the peace were vested with powers of supervision.

In spite of the admirable principles of the poor-law, in practice its operation was not satisfactory. One difficulty appears to have been that overseers of the poor neglected their duty to provide stocks of raw materials and work for able-bodied persons. The training of children by apprenticeship in certain crafts led to their ill-treatment, and the plan of providing relief from the rates led to considerable abuses. That clause of the law which secured assistance for parishes not rich enough to maintain their own poor entirely by supplementing these rates from the rest of the "hundred" was abused by converting it into an instrument whereby unscrupulous employers reduced wages in their own parish for the purpose of obtaining this "rate in aid." [71]

The reform of the poor-law. In spite of these shortcomings, the Elizabethan Poor-Law continued in operation as the basis of English poor-relief for several centuries. But between 1601 and the Poor-Law Amendment or reform of 1834, the state continued legislative experiments in the field of poor-relief. The history of this experimentation may be conveniently divided into three parts: the period 1660 to 1760, characterized by heavy poor-rates and settlement laws of more or less severity; the period 1760 to 1800,

[70] Lonsdale, S., *The English Poor Laws*, London, 1901.
[71] Gibbins, *op. cit.*, pp. 261–263.

marked by lower poor-rates and a change in the spirit of poor-relief; and the period 1800 to 1834, or that of oppressive rates and increasing demoralization.

The Settlement Act of 1662 restricted the obligation of the parish to relieve destitution to persons who had legal settlement within its borders. Legal domicile, or settlement, was acquired by birth, proprietorship, sojourn, service, or apprenticeship. Upon complaint of the overseers, justices might order a person who had lived forty days or less within a parish to remove to his own place of settlement. It was expected that this act would remove from parishes the burden of those who were already dependent or likely to become so, and put responsibility where it belonged—upon the community where the indigent person had settlement. But the effect was to destroy the mobility of labor and bind the working classes to the soil. The act was used by poor and rich parishes alike in the selfish endeavor to prevent an influx of poor from other parishes. These vicious practices checked the natural mobility of labor, industry consequently declined, and, impoverished by lack of employment, the laboring classes became more and more a heavy charge upon the poor-rates. Instead of correcting these abuses, subsequent legislation made the acquisition of settlement even more difficult, and thus aggravated the problem. Substantial amelioration of these harsh and unwise settlement restrictions did not come until 1795, when it was enacted that expulsion from a parish could not be made unless the person concerned was actually dependent, not merely a possible future dependent.

Since overseers of the poor had often been careless in their administration of funds, and had abused their powers, it was provided in 1791 that supreme power in relief administration should be vested in justices. This act required a careful registration of all paupers in each parish, a certain degree of publicity with reference to the amount of relief given, and ordered that no name should be added

to this list except by authority of the justices. Instead of improving the administration of poor-relief, this act had the opposite effect, and made the system more lax than ever.

Increase of expenditure encouraged people to look for a more economical method of caring for the poor. Hence the idea of building poorhouses became popular. It was thought that paupers could be put at remunerative work and thus contribute to their support. By an act of Parliament a workhouse was erected at Bristol in 1697. Other places followed this example until, in 1722, it was enacted that parishes might combine into unions of two or more, or might singly erect, buy, or rent workhouses. A "work-test" was provided by the ruling that "no poor who refused to be lodged and kept in such houses should be entitled to ask for parochial relief." Wherever adopted, the system caused an immediate decrease in the expenditure for poor-relief. Unfortunately, another provision of this act authorized parishes to "farm out" their poor by permitting them to contract with persons for the lodging, maintenance, and employment of the poor. Grave abuses resulted. The helpless inmates of these poorhouses and workhouses were cruelly treated by inhuman contractors.

The farming out of the poor was abolished by Gilbert's Act of 1782. Adjacent parishes were given the right to unify their administration of relief, as well as to unite for a common poorhouse. Indoor and outdoor relief was to be administered by paid "guardians" who were appointed by justices. The duties of overseers were reduced to the mere assessment and collection of funds. Visitors were also to be appointed by the justices, and, in association with these honorary officials, justices exercised supervision over the administration of poor-relief. But, since the adoption of this system was optional and not mandatory, the reforms did not become widespread.

An unfortunate departure from sound principles was

contained in Gilbert's Act by the stipulation that while only the old and infirm poor, mothers of illegitimate children, and children too young to work, should be maintained in the poorhouse, guardians should find work for the able-bodied poor near their own homes and collect their wages for them, applying the same towards their maintenance, and supplementing low wages by a subsidy from the relief funds. This was the beginning of the vicious allowance system by which relief in aid of low wages was granted. This practice pauperized many of England's laborers and demoralized the working classes. It reached its culmination in 1795 when the magistrates of Berkshire established the custom of aiding all poor families who were industrious, but whose incomes were considered insufficient. Relief from the poor funds was made to such families in consideration of the price of wheat and the size of the family.[72] This example was followed by the whole country, and Parliament soon legalized (1796) outdoor relief to able-bodied persons by rescinding the Act of 1722 with its salutary principle of the "workhouse test," and legalizing wage subsidies. Thus indiscriminate relief was legalized, and the demoralization of the laboring classes encouraged.

Our account of the development of English poor-relief mores has shown the trial and error efforts, first of local groups and then of the state, to deal with the always irritating and perplexing problem of adjusting those individuals who are socially and economically inadequate to the requirements of changing society. The reaction of the group to this problem is recorded in town ordinances and legislative enactment. While only the bare outlines of the problem were traced in the study of Greece and Rome, we have been able to follow the course of changes in some detail during the period of English experience surveyed. These historical facts will supply us with the data for an impor-

[72] Fowle, T. W., *The Poor Law*, London, 1906, pp. 65–66.

tant generalization about collective behavior which will receive more detailed treatment in Chapter VIII, after we have laid the foundation for a better understanding of cultural change in the chapter immediately following.

PART III

THE INTERPRETATION OF CULTURAL CHANGE

CHAPTER VII

DO CULTURAL CHANGES OCCUR IN CYCLES?

THE rhythmic character of historical change has been often commented upon. The historical facts of the preceding chapters have been presented to illustrate the principle. The subject is of sufficient interest to justify an effort to attempt an explanation in terms of a systematic theoretical formulation. It is the purpose of this chapter to suggest certain provisional hypotheses as parts of such a theory.

Sorokin [1] has recently published an exhaustive account of cyclical theories advanced by different historians and students of social science. He has summarized his study in the following way:

CYCLICAL CONCEPTION OF HISTORICAL AND SOCIAL CHANGE

1. Ever-repeating identical cycles
2. Linear or spiral cycles which tend toward a definite goal
   (*a*) Periodical } Progressive / Retrogressive
   (*b*) Non-Periodical } Progressive / Retrogressive
3. Cycles and rhythms which are neither identical nor tending to a goal
   (*a*) Periodical
   (*b*) Non-Periodical

Kroeber [2] has studied cultural changes in relation to the

1 "A Survey of the Cyclical Conceptions of Social and Historical Process," *Social Forces*, vol. vi, no. 1, Sept. 1927, pp. 28–40; see also Sorokin's *Social Mobility*, 1927, and *Contemporary Sociological Theories*, 1928, ch. 13.

2 "On the Principle of Order in Civilization as Exemplified by Changes of Fashion," *Amer. Anthropologist*, vol. 21, p. 3.

fashions of women's dress and assembled considerable factual data consisting of quantitative measurements. To these two sources the reader is referred for general criticisms and concrete data.

The most hopeful approach to the concept of cultural change would seem to be to regard the process as selectively accumulative in time, and cyclical or oscillatory in character. This approach leads at once to a somewhat different view of historical continuity and recognizes two aspects of the principle.[3]

In the first place the main stream of human culture, which Morgan tried (without success) to prove passed through universal evolutionary stages, is found to be something of an abstraction. Morgan and his school seem to have confused this abstract idea of a main or central stream of human culture with the facts of concrete similarities in different areas at different times. In so far as these concrete similarities exist, it would now appear that they are really examples of similar cyclical changes in independent culture groups and not illustrations of universal cultural stages in one continuous world-wide stream of unified cultural evolution. The critical work of Boas,[4] Lowie,[5] Goldenweiser,[6] Wissler,[7] Kroeber[8] and others, has been of immense value in clearing the ground of obsolete theoretical structures, but on the other hand no constructive theory has been advanced to meet the need of a logical explanation of the larger processes of cultural continuity. Historians, archæologists, sociologists, economists and anthropologists have all at one time or another mentioned various significant elements of cultural change, but there have been few

[3] Chapin, F. S., "A Theory of Synchronous Culture Cycles," *Social Forces*, vol. iii, no. 4, May 1925, pp. 1–9.

[4] Boas, F., *The Mind of Primitive Man.*

[5] Lowie, R. H., *Culture and Ethnology; Primitive Society.*

[6] Goldenweiser, A. A., *Early Civilization.*

[7] Wissler, C., *Man and Culture.*

[8] Kroeber, A. L., *Anthropology.*

attempts [9] to organize these elements into sets of related hypotheses which might be combined into the preliminary outline of a tentative theoretical explanation.

The second form of historical continuity consists of separate streams of group cultures. This process is illustrated in the cycles of national growth and decay. For the sake of analysis the phenomena may be split up into cycles of (1) material culture and of (2) non-material culture. Historians have tended to hold to this idea of separate streams of group (national) culture, and have rightly criticized the main-stream-universal-stage theory. With these two different principles of historical continuity mentioned, let us pass on to a more detailed examination of our problem.

1. The Character of Cultural Change

Cultural change is accumulative. This has been shown by Wallas,[10] Hobhouse,[11] Bernard,[12] Ogburn [13] and many others. Ogburn makes the point that cultural change is selectively accumulative. There is a dropping out of elements, but there is also the adding of new elements by invention and borrowing. The social anthropologists Wissler,[14] Lowie [15] and others have elaborated hypotheses of the diffusion of cultural factors with considerable care. European anthropologists like Graebner,[16] Rivers,[17] Elliot Smith,[18] and others have tended to place chief reliance on this hypothesis, and use it less critically than American social an-

[9] Petrie, *The Revolutions of Civilization.*
[10] Wallas, G., *Our Social Heritage.*
[11] Hobhouse, L. T., *Social Evolution and Political Theory.*
[12] Bernard, L. L., "Neuro-Psychic Technique in Social Evolution," *Psychological Review,* 1923.
[13] Ogburn, W. F., *Social Change;* Sims, N. L., *Society and Its Surplus,* 1925.
[14] *Ibid.*
[15] *Ibid.*
[16] Graebner, F., *Methode der Ethnologie.*
[17] Rivers, W. H. R., *History of Melanesian Society.*
[18] Smith, E., *Migrations of Early Civilization.*

thropologists. The rôle of invention has received attention recently at the hands of Bernard [19] and Ogburn.[20]

But cultural change is also wave-like, oscillatory, rhythmical or cyclical, to use a variety of terms which appear in the writings of different authors. The popular aphorism, "History repeats itself," is a recognition of certain recurrences and similarities in historical development. This repetition is, of course, not identity of occurrence, but a somewhat striking similarity of forms or events in different historical periods or in different regions.

Beer [21] even goes so far as to say that every nation of history has passed through its "period of antiquity," its "middle ages," and attained its own "modern times" before its unity of existence passed away. As a consequence the ideas, institutions, customs and ways of life of different peoples correspond more or less for the same relative period of their evolution. This is why we find so much that is "modern" in the thought of certain periods of antiquity. All these nations passed through the same cycle, except that of the most modern period, because the ancients did not produce an industrial revolution and developed no application of science to manufacturing industry. While Beer's theory is quite general and one might take exception to some of his historical interpretations, it nevertheless seems that there is a real kernel of truth in the hypothesis. More concrete evidence of cultural cycles of an historical character will be found in the works of archæologists who have observed that prehistoric paleolithic implements such as the *coup de poing* of the Acheulian culture level, a pointed stone implement which evolved from lower Chellean levels to its perfected form in the Acheulian, was used continuously until, after thousands of years of development

[19] Bernard, L. L., "Invention and Social Progress," *American Journal of Sociology*, 1923.

[20] *Ibid.*

[21] Beer, M., *Social Struggles in Antiquity.*

and employment, it fell into a period of degeneration and of final disuse in the Mousterean level.[22]

Perhaps sufficient evidence has been presented in the preceding chapters to illustrate the concept of the cyclical or rhythmical character of cultural change. The question remains, Can this hypothesis be reconciled with the view of

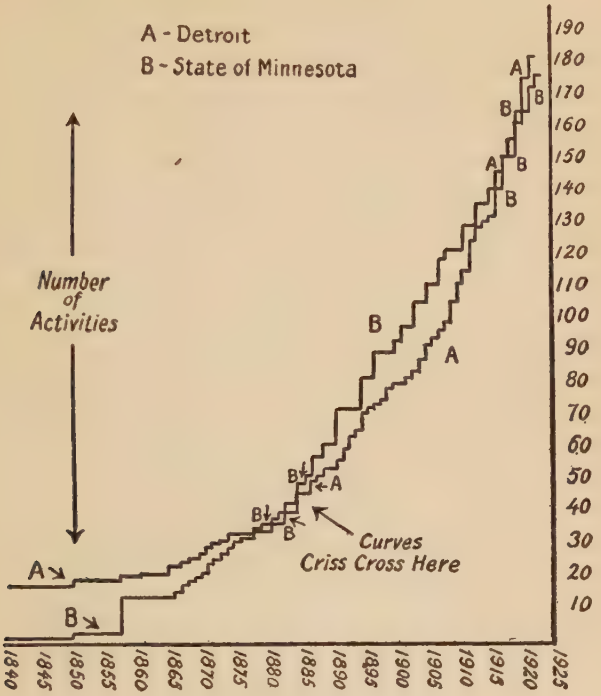


FIGURE 13

Growth of Political Structure

selective accumulation of culture? It may be stated at once that there is no inconsistency between the two hypotheses. In fact they are complementary in a very striking manner on the assumption that the phenomena of selective cultural accumulation is descriptive of merely one phase of the

22 Osborn, H. F., *Men of the Old Stone Age.*

cycle process. Selective culture accumulation is a description of the upward rise of the culture cycle. It does not describe the phase of equilibrium, or maximum development or diffusion, or of strain. Neither does it describe the phase of disintegration or metamorphosis of an old cultural form into a new one.

It may be worth while to stop at this point and illustrate the principle by a concrete case drawn from the field of social institutions. Figure 13 presents a picture of the profile of selective cultural accumulation in the case of two political structures. Curve A is a graph of the increase in the number of departments, commissions, functions and activities of the city of Detroit. Curve B is a similar graph for the government activities of the State of Minnesota. Along the base line from left to right the years are measured. The distance of any point on the graph from the base line measures the number of governmental activities operating at that year. Some activities have been at various times eliminated, but so many others have been added that the effect is almost that of an exponential curve. This diagram is thus a graphic picture of selective cultural accumulation in the case of two definite social structures. A moment's consideration of the trend of other social phenomena and groupings will suggest how universal the principle is. Religious sects originate, grow, spread, elaborate, reach a point of maximum support or diffusion, fluctuate in size and effectiveness, gradually decline, disintegrate, or metamorphose into some other organization. The Associated Charities of a large city develops a legal aid department. This function elaborates until it breaks off from the mother society and sets up as an independent social agency. Meanwhile the Visiting Nurse Department enlarges its functions and also breaks away to form an independent and autonomous social unit, the Visiting Nurse Association. Even the Confidential Exchange, the one-time departmental function of the Associated Charities, separates and becomes an in-

dependent Social Service Exchange. Thus the mother cell breaks up by a process of fission into new and independent units.

But the last two examples are not quite in the same category of the illustration as those drawn from city and state government. Moreover, other illustrations of the rhythmical character of social change drawn from the phenomena of fashion cycles, crime cycles, divorce cycles and dependency cycles, suggest themselves at once to mind. It becomes necessary to find some system of classification for these different kinds of social change, all of which seem to have in common a certain oscillatory movement. Let us now proceed to consider this problem.

2. A Theory of Synchronous Culture Cycles

When viewed for any length of time the phenomena of change, whether they be physical or social, seem to take on a rhythmical character. We have the major climatic rhythms of glacial periods and inter-glacial periods.[23] Huntington distinguishes other rhythms of climate of shorter duration.[24] There are the seasonal changes in temperature which appear with striking regularity. Plants and animals pass through life cycles of birth, growth, maturity, decay, and death. In the social field we observe the business cycle of depression, revival, prosperity, strain, crisis and depression again.[25] Ogburn, Thomas, and Hexter have found that certain social phenomena such as unemployment, poor relief, marriages, births, divorce, deaths, suicides, crime, and religious revivals, fluctuate in concurrence, sometimes very strikingly close, with the business cycle.[26]

[23] Geikie, J., *The Great Ice Age; The Antiquity of Man in Europe.*

[24] Huntington, E., *Climate and Civilization.*

[25] Mitchell, W. C., *Business Cycles,* also *Business Cycles: The Problem and Its Setting,* 1927.

[26] Ogburn, W. F., "The Influence of the Business Cycle on Certain Social Conditions,"*Journal Am. Statistical Assn.,* 1922; "Business Fluctuations as

Tarde long ago called attention to the rhythmical character of imitation.[27] It diffuses from central models enjoying prestige, it spreads by geometric pogression in many directions, in some cases it is refracted by its media more considerably than in other cases, it reaches a point of saturation, and the old model declines before some new model which has set up a wave of counter-imitation. Historians have related the rise and fall of social institutions such as ancestor-worship, slavery, the patriarchal family, and others. National groups have formed, expanded and elaborated, and then weakened and disintegrated. Social clubs, fraternal orders, civic associations and other groupings are continually in ebb and flow, in wax and wane stages.

That some logical order may be brought out of these amazingly complex phenomena of social change, it is permissible to make certain assumptions and to frame certain hypotheses as long as we do not fall into the error of regarding mere working hypotheses as inductively proven laws. With this caution in mind certain steps may at once be taken.

Cycles of social change are of several orders. Beginning with those whose data are most objective and verifiable we may distinguish:

1. Cycles of the first order which relate to material culture.
   (*a*) Those of minor degree may be studied in a given locality within the span of a limited period of time. These would be illustrated by the displacement of one machine in industry by another, by the business cycle, by the cycle of dependency in a given city, by the discovery and invention of a definite process of manufacture.
   (*b*) Those of major degree are illustrated in the rise and fall of the slave system in Rome, the manorial system in England, feudalism in France and industrial capitalism in Europe.

Social Forces," *Journal of Social Forces*, 1923; Hexter, M. B., *Social Consequences of Business Cycles*, 1925. Ch. 8, 9; Thomas, D. S., *Social Aspects of the Business Cycle*, 1925. Ch. 10.

[27] Tarde, G., *Laws of Imitation.*

2. Cycles of the second order relate to non-material culture.[28]
   (*a*) Those of minor degree are illustrated by the rise and fall of certain religious sects in definite regions, to the discovery, adaptation, growth and development of some form of governmental structure, like the commission form of city government in a certain community, and similar cultural forms.
   (*b*) Those of a major degree are illustrated by the rise and fall of such social structures as the religion of ancestor worship, the patriarchal family, the monarchical form of government, and so on.
3. Cycles of the third order relate to larger cultural composites such as "national" cultures or civilizations. Within the span of these cycles of the third order there may be whole series of cycles of the first and second order.
   (*a*) Those of minor degree are illustrated by the rise and fall of dynasties, and the rise and fall of certain class dominances.
   (*b*) Those of major degree are illustrated by the rise and fall of nations, such as of the Hellenic culture in antiquity, the Roman Empire, the Mycenean civilization, and so on.

It is clear that as we proceed from a consideration of cycles of the first order which relate to rhythms of material culture, to cycles of the third order, which relate to a whole culture or civilization, our phenomena become more general and our powers of accurate description more vague and less satisfactory, but we have postulated these different cyclical levels for the sake of certain logical conclusions to which they lead in the hope that this process may supply a new point of view and possibly new insight into age-old problems.

Before passing to concrete illustrations of these hypotheses and to the helpful insights to which they may lead, it will be worth while to suggest certain comparative aspects of cycles of these three different orders. Cycles of

[28] Sorokin's contention that cycles in material culture do not necessarily precede cycles in non-material culture is well taken and our theory does not claim that the contrary is the invariable order; however in contemporary society this does seem to be the true order.

the first order are relatively rapid in the time they consume. A new machine may be displaced by another in a few years, in a year, or even within a period of months. The business cycle moves in periods of three, seven, and perhaps twenty years.[29] On the other hand the period of feudalism was of relatively long duration. Cycles of the second order seem to move more slowly than those of the first order. In such cases where we find adhesions between phenomena of the first and second order, those of the second order tend to show a definite lag behind changes of the first order. Workmen's compensation came fifty years after changes wrought by the industrial revolution had made the old principle of employers' liability obsolete.[30] We still have common law marriage in an era of written contracts. Family mores of the day lag behind modern industrial-urban living conditions.[31] Since, by definition, cycles of the first and second order run their course within the span of cycles of the third order, the latter are relatively slow and ponderous forms of social change.

We may now make certain a priori assumptions in order that we may pass to certain working hypotheses with respect to the cyclical character of social change.

1. It may be postulated that every cultural form (whether it be a manufacturing machine, a tool, a paleolithic implement, the commission form of government, a Family Welfare Association, a cultural nation, a fraternal order, a social club, hobble skirts, and so on) has its own law of change, with the qualification that for certain classes of social phenomena there may be some basic and common law of change.

2. The law of each cultural form is probably cyclical and may be periodic.

[29] King, W. I., "Principles Underlying the Isolation of Cycles and Trends," *Journal American Statistical Association*, 1924.

[30] Ogburn, W. F., *Social Change.*

[31] Chapin, F. S., "The Lag of Family Mores in Social Culture," *Journal Applied Sociology, March-April*, 1925.

3. It is possible to discover and express quantitatively (perhaps in mathematical formula) the law of its life cycle or periodic function.

4. When the cycles or periods of a number (majority?) of cultural forms of the first and second order are synchronous, we have the era of maturity of the cultural nation or group in which these culture traits are found. It is

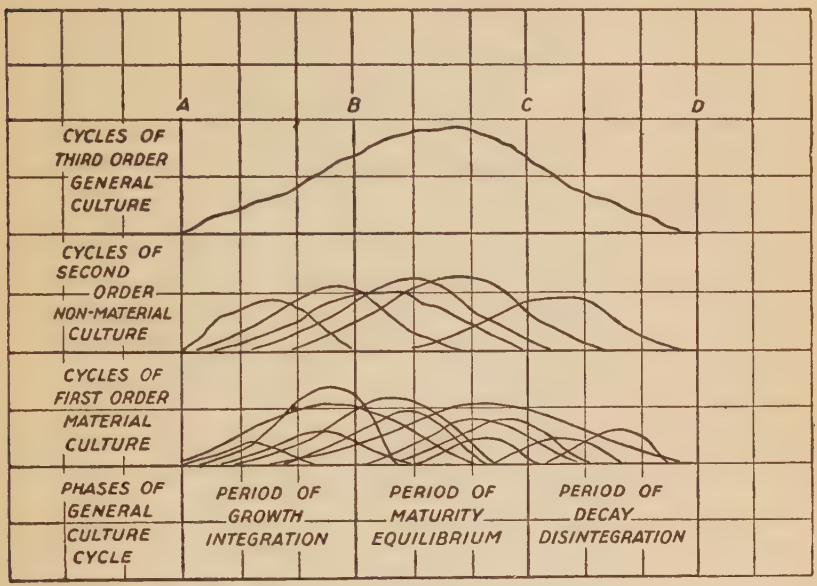


FIGURE 14

Diagram of Synchronous Culture Cycles

not possible to state what particular culture traits or how many social forms in aggregate need to be in synchronous rhythms to produce the flowering of a particular national culture. This remains to be discovered, assuming that the foregoing hypotheses suggest a valid mode of attack.

Since these hypotheses are somewhat abstract it may be helpful at this point to examine Figure 14 in which a rough graphic picture of the theory of synchronous culture

cycles is shown. It will be observed that cycles of the first order relating to material culture are shown at the lowest level, that cycles of the second order are shown on the next level and in an intermediate position, and that cycles of the third order are shown at the top. The rough graphic analogy is that the curve of national culture at the highest level is a function of the (sums?) ordinates of the two lower levels. Moreover, while the curve of national culture is passing through its cycle of periods of growth (integration), maturity (equilibrium), and decay (disintegration), theory calls for a similar process taking place within the life cycle of each constituent culture form, whether it be a form of material culture or a form of non-material culture. In other words, many social forms rise and fall during the major period of integration of the national culture cycle, innumerable other cultural forms pass through their life cycles during the major period of equilibrium of the national culture, and many other cultural forms pass through life cycles in the major period of disintegration of the national culture cycle.

MacIver [32] and Ellwood [33] have claimed that social forms do not pass through cycles, and yet their disagreement with our views is more apparent than real. They seem to have in mind the main stream of human culture which we agree is continuous. Our hypotheses relate only to culture traits and complexes that constitute the main stream.

It is possible that the periods of integration, equilibrium and disintegration, through which each social form is assumed to pass, are susceptible of quantitative measurement. In fact an examination of Figure 13 will show that the period of integration of city government in Detroit and of state government in Minnesota is capable of measurement.

[32] *Community*, 1917, Book iii, ch. ii, pp. 200–213.

[33] *Op. cit.*, ch. xix. The data descriptive of a cycle of rapid growth, equilibrium and gradual decline for the cotton, wool, iron, steel and electrical industries collected on Simon Kuznet's *Secular Movement*, support our view and weaken the opinions of MacIver and Ellwood.

It would be but another step to fit a mathematical curve to the data. If similar studies of other American cities and states showed similar curves, we might thus discover the law of growth of political structure. But certain centralizing tendencies are already at work in American government. Some states have consolidated their state governments and eliminated certain departments, boards and commissions. These state structures may therefore have at-

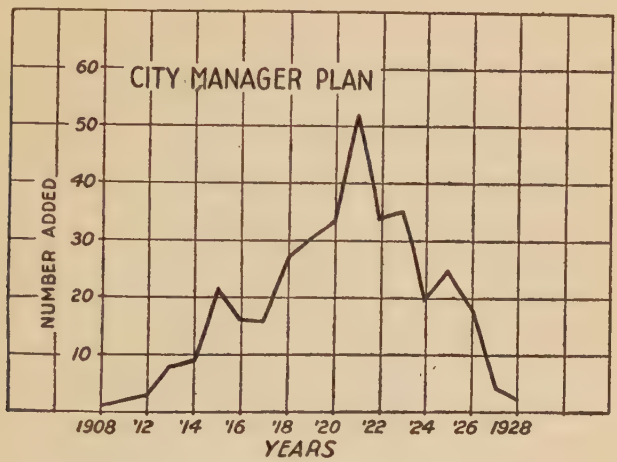


FIGURE 15

Growth of the City Manager Plan

tained the second stage of the social life cycle, that of equilibrium. Will they disintegrate some day?

We cannot answer this question now. In Figure 15 is shown the growth and spread of the City Manager plan of government in the United States. It will be observed at once that this graph shows a period of growth (diffusion of this form of government), a period of greatest extension of the idea, followed by a period of falling off of diffusion. The data upon which this diagram is based seem to conform to the principal of cyclical social change postulated a moment ago. It should be stated here and now that these data

were not selected after an examination of other social data inconsistent with the theory, but were the first taken for analysis. The confirmation of theory is therefore all the more striking, but should not receive too much weight, since the principle will need to be verified in many other cases before it can be raised from the level of a mere working hypothesis to that of an inductive law of social phenomena. It is worth noting, however, that the illustration is pertinent to the matter under discussion and may suggest to others scientific study in this fascinating field.

At this point the question may be raised, The principle of a social life cycle may be true and even socially valuable, but why pass from the study of these concrete phenomena to the very debatable hypothesis of a life cycle in national cultures? The answer is that political structure of national scope has been for centuries one of the absorbing interests of human beings, and yet so little is known of laws of this larger cultural-political complex that the average man of every historical epoch thinks of the social and political order of his time as something fixed and changeless. Even if earlier cultures or civilizations rose and fell, always the present order is regarded as somehow the final and permanent human society. Possibly our analysis will suggest a somewhat new orientation and a new mode of attack on this subject of general interest.

3. Cycles of a Periodic Character

This theory of synchronous culture cycles relates chiefly to the assumption of a *social life cycle* of integration, equilibrium and disintegration, through which social forms are supposed to pass. What relation is there between this hypothesis and the particular forms of social change it may help to explain, and such other forms of social change as the *periodic* rise and fall in marriage-rates, divorce-rates, crime-rates, and similar social changes? While the economic

factors are certainly operative in connection with these rhythmic social changes, since it is likely that marriage may be more possible in prosperity than in depression, that the expense of divorce is more likely to be undertaken in time of business activity when money to pay for the proceedings and for alimony is available than during a dull period, and since crimes against property grow out of the unemployment, want and misery of a depression, there are still operative certain social factors which need analysis and explanation.

Some economists have seen in the business cycle one of the results of over-production. Without entering into the pros and cons of this argument we may be permitted to inquire whether it suggests any line of approach to the social analysis of our problem of cyclical cultural change. It may be stated at once that if social forms do follow some cyclical law of growth, maturity and decay, it is not unlikely that there may be periods during which whole groups of social structure grow, elaborate, diffuse and integrate, more rapidly than other social structures pass from a condition of equilibrium to disintegration and make room for the new forms. If such is the case we may easily reach a state of over-organization for a given community. Social organization can become too complex for the average man to function efficiently. As a matter of fact our present political structure seems to be in such a state. We have more laws, municipal, state and congressional, than an expert lawyer can ever know. Our thousands of towns and cities produce an annual output of ordinances and regulations that amounts to tens of thousands of printed pages, our state legislatures grind out statutes at a rate which it is impossible for the administration and the courts to enforce, and Congress is engaged in the same activity. Our democratic form of government assumes that each citizen knows the personal qualifications of, and checks up on the attitudes of, his representative in the city council, his senator and

representative in the state legislature, his congressmen and all the army executive officers elected and appointed by his representatives. Does any citizen do all this? If he did one-tenth part of his political duty in this respect he would have no time left for making his living, for sleep or for eating.

Let us analyze the process in terms of other social structures, for besides the tendency of political structure in democratic society to elaborate, other social structures also grow more and more complex. One need only consider the recent phenomena of the growth of women's clubs, the increase in fraternal orders and in business and commercial organizations, the differentiation of religious sects and cults, the growth of labor unions and trade organizations, the increasing volume of printed matter that comes in general newspapers and magazines, all the new books, all the journals of technical subjects and the special organs of special interest groups of scientific, religious, business, commercial, and professional character. A somewhat free and democratic organization of our larger political life and the rapid extension of machine manufacture and mass production are probably the two factors of most importance in the "flowering out" of our present-day industrial civilization. Every new invention brings in its wake a host of accessory appliances and repairing tools. The purchase of an automobile is merely the starting point for a long series of wants such as chains, a radiator cover, automatic windshield cleaners, balloon tires, cushion covers, bumpers, a camping outfit, a night parking lamp and so on. We have radiator brushes, humidifiers, and sink brushes, whereas formerly the kitchen stove warmed the living room and we threw the dishwater out of the pantry window. The mere name radio at once brings up the association of a long list of articles, appliances, auxiliary devices and repairing outfits. Owing to the increasing complexity of our standard of living and the increasing specialization of occupational

functions, differences in degree appear to become differences in kind.

How does the individual function in the midst of this increasing complexity? Already the feeble-minded have been differentiated as a group of individuals congenitally incapable of keeping up all these contacts, for they have been cast aside by the swirling eddies of modern civilization. Now there is reason to believe that every individual possesses a range of elasticity of capacity to participate in group activity.[34] This range depends on sex, age, educational opportunity, personal experience, and custom, as well as upon native ability.

There are occasional rare individuals whose nervous system is so complex that they are capable of taking an important part or assuming leadership responsibilities in a considerable number of different group activities. This type is represented by Theodore Roosevelt and Lloyd George. But the great mass of men are not so versatile. It would seem as though the momentum gained during the phase of social growth (see earlier paragraphs) has carried social structure (political organization, social clubs, agencies, and so on) to an elaboration and complexity far beyond the capacity of the average citizen to participate intelligently and effectively in group activity. He mills round from one group to another without functioning as a thinking human being in the determination of social policy. In other words, things have become so complex that the professional politician and the organizer do the thinking, and the man of the street follows automatically. But social structure and social relationships have already become too complex for even the professional organizers to understand, much less to control or to guide intelligently, and the whole social system has become over-organized, possibly over-centralized, and certainly dangerously topheavy. The Webbs have

[34] Chapin, F. S., "Leadership and Group Activity," *Journal of Applied Sociology*, 1924.

already written on the decay of capitalistic civilization.[35]

There are two immediate dangers arising out of this situation which may be noted in passing: the tendency to create new social machinery to meet new needs instead of adapting old machinery to the situation; and the tendency of specialized mores and social traditions to elaborate in communication-tight compartments and to create a serious condition of dissociation among social traditions with resulting conflict and enhancement of cultural lags. As we have treated these points more fully elsewhere, it may be well to go on to further analysis of our problem of cultural cycles.[36]

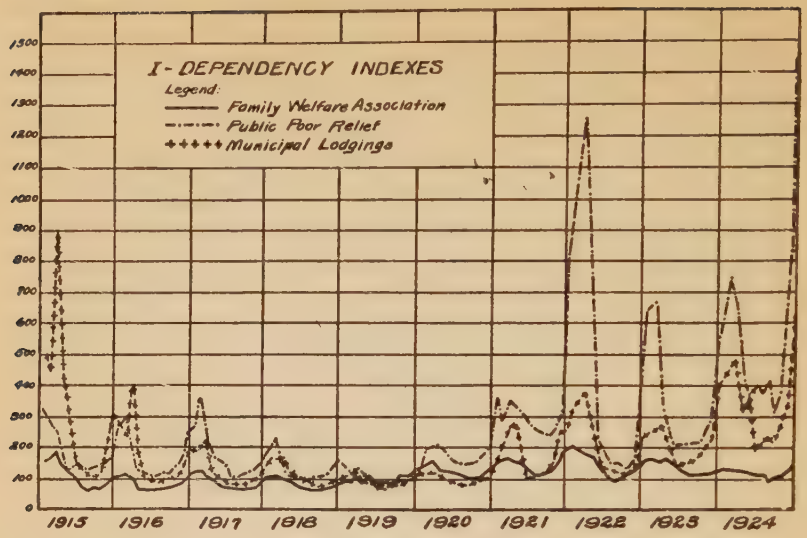
We have already shown how the hypothesis of selective cultural accumulation is consistent with the hypothesis of a life cycle for definite social forms. It remains to consider the probable relations between the hypotheses of selective cultural accumulation, *social life cycles* and the cycles of social change that appear to show some *periodicity*. Social relations form (in the time sense at least) a current of continuous qualitative and quantitative changes. Social forms, customs, institutions, groupings and structures, wax and wane, rise and fall, spread and contract, and pass on down the stream of history. While some are passing through the period of integration, others are entering a phase of decline, some are disintegrating, and still others are attaining a phase of equilibrium and strain. Some rise rapidly and decline slowly. Some rise slowly and decline rapidly. The rates of elaboration, diffusion, or disintegration are varied and changing, and yet through all this process of change there is discernible the periodic rise and fall of such social phenomena as marriage-rates, divorce-rates, unemployment, suicide and dependency. What explanation may

[35] Webb, S. and B., *The Decay of Capitalistic Civilization;* see also, Spengler, O., *The Decline of the West*, 1926 (transl. by Atkinson); and Mendelsohn, S., *Saturated Civilization*, 1926.

[36] Chapin, F. S., "Democracy and Class Relations," *Pub. Am. Sociological Society*, 1919; "Some Thoughts on Our Social Machinery," *The Survey*, 1924.

be advanced as a working hypothesis for further study? The hypothesis which seems most promising is: periodicity in sociological time series is some function of the cumulation or piling up of cultural forms which appear as many superimposed waves. More particularly, when a considerable number of social forms are passing through the phase of integration, social structure grows rapidly until such a level of equilibrium and strain is reached that a readjustment between the piled-up cultural lags and the over-organized social structure becomes necessary and a process of reaction sets in. During this period of decline, some social forms are in a phase of integration, some in the phase of equilibrium, but those in the phase of disintegration have gained such momentum that the general direction of change is reversed over the preceding period.

An example may serve to clear up the point. For the past three years several graduate students have been investigating the phenomena of dependency. (See Figure 16.) Five series of index numbers have been constructed representing medical relief, relief by a private agency and relief by public agencies. When compared with an index of bank clearings we find that change first takes place in the banking curve, somewhat later the medical relief curve rises as prosperity permits the luxury of paying for medical assistance and nursing care; then the curve of private relief and service rises as the surplus income of prosperity is exhausted and the medical relief curve falls; finally there follows a rise in the public poor-relief curve as private agencies reach a saturation point and those in want are crowded over into application for that most distasteful form of assistance of all—public relief. It therefore appears that we have a wavelike type of change which seems to be of cumulative character. Without going beyond this one example drawn from sociological phenomena, it may be worth while to point out that economic analysts have given us some very interesting attempts at the analysis of cumulative



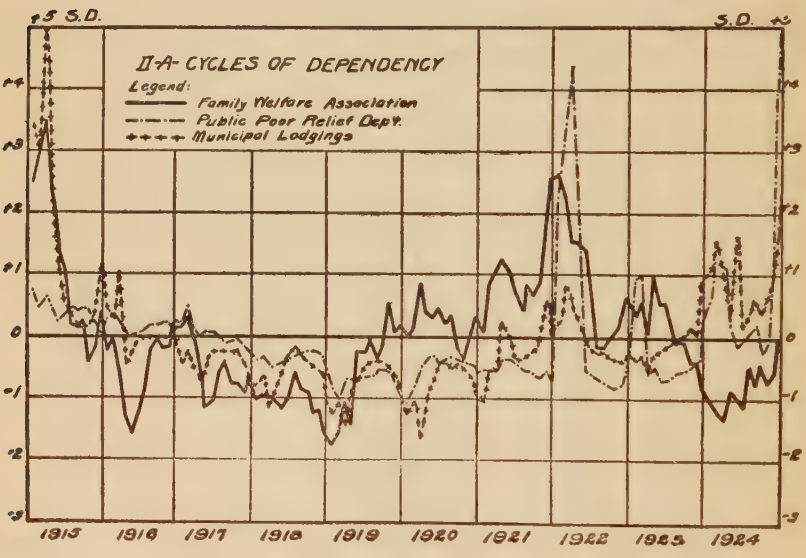


FIGURE 16

Dependency Indexes and Cycles for Minneapolis

Charts I and IIA

economic phenomena of a cyclical type in the theory of economic conjuncture [37] and in the theory of quadrature.[38] In fact the mathematical analysis of time series has already been so well developed by economic analysts that we may recognize four types of change which usually appear to be superimposed when a long term of years is studied.[39] We have applied this type of analysis to the study of the phenomena of dependency and have been able to pick out one by one and measure with some exactness such forms of change as the secular trend, the cycle, seasonal variation, and irregular fluctuations.[40] Moreover, when these cyclical changes are studied in connection with certain economic series, it is possible to venture a prediction as to the future course of the dependency cycle within a margin of error that by no means neutralizes the practical value of the work.

One final point must now be made to round out this preliminary outline of a theory of synchronous culture cycles. Consider for a moment the thermostat of the physicist. The principle is in every-day use in homes that regulate furnace heat by thermostat. An approximately even temperature may be preserved by a regulator, but the regulator functions only *after* the temperature has changed. In short, a certain difference in temperature is required to bring the regulator into action, since the regulator can only correct an existing deviation from normal. Thus every regulator lags, because a change in the environment must first occur before the regulator begins to exercise its controlling function. The wavelike rise and fall of temperature is perfectly *normal.* Is there a suggestion in this for the prob-

[37] Kondratieff, N. D., *The Static and Dynamic View of Economics and the Problem of Conjuncture,* 1924.

[38] Karsten, K. G., "The Theory of Quadrature in Economics," *Journal American Statistical Association,* 1924.

[39] Persons, W. M., "The Correlation of Time Series," in Rietz's *Handbook of Mathematical Statistics.*

[40] Chapin, F. S., "A Dependency Index for Minneapolis," *Pub. Am. Sociological Society,* 1924. See also by same author, "Dependency Indexes for Minneapolis," *Social Forces,* vol. v, no. 2, Dec. 1926, pp. 215–224.

lems of cultural change we have just analyzed? Ogburn has shown that there was a piling up of social wreckage from industrial accident for forty years before the evil was adequately regulated by workmen's compensation laws.[41] In the field of economic phenomena there were years of disastrous panics before the Federal Reserve system was established.

Of course this analogy is imperfect because in physical science we have but one variable, controlled by the regulator. In the social field, however, there are many variables and a whole mass of phenomena pile up although each separate constituent may be subject to the common principle of oscillatory change. Each component probably has its own amplitude and period. Moreover the elements do not act independently but together. The actual results of these complicated changes are seen in the sum total (or some other more complicated function) of many superimposed waves. Yet we ask, what are the regulators in social time phenomena? On the level of material culture there are the well known regulators, the stock and produce exchanges, and the Federal Reserve System of bank note issue as well as the central and branch bank systems of other nations. These regulators are affected by changes in the material environment such as the industrial revolution and the mechanization of industry, the discovery of new natural resources, scientific invention, new practical applications of science and new means of communication and transportation. On the level of non-material culture in the realm of secondary mores, we have as regulators of social change the various elements in the system of social control such as custom, belief, public opinion and education, as well as law. These regulators are not so efficient as those in the economic realm because they lack centralization except perhaps in the case of government and law, but these forms of

[41] Ogburn, W. F., *Social Change.*

control are still very inefficient because of ignorance of laws of social phenomena. The point to be made in conclusion is that the wavelike rise and fall of certain social phenomena is *normal* and that the problem of social control in this connection is one of diminishing the severity of the cycle.

CHAPTER VIII

IS THERE A SOCIETAL REACTION PATTERN?[1]

IN the preceding chapters we have summarized the trends of cultural change which the economic and social histories of Greece, Rome, and medieval England seemed to reveal. A theory of cyclical culture change has been formulated.[2] In this chapter we pass on to a study of other phases of socio-economic history, such as trends in poor-relief mores, and we conclude that the development of poor relief practices reveals the outlines of a fundamental social principle—a societal reaction pattern.

1. The Pattern Concept and the Group Concept

The term *pattern* is variously used in anthropology, psychology, and sociology. In anthropology, the concept usually has had spatial (geographic) and structural connotations. Culture areas and culture centers are spoken of.[3] In psychology, the concept usually has had a somewhat more dynamic meaning in that a reaction pattern is a series of successive movements in a chain of complex response.[4] Thus to a certain degree anthropologists who use the term to describe certain aspects of culture use the word *pattern*

[1] The substance of this chapter was written in 1926 and published under the title, "A Theory of the Societal Reaction Pattern" as a chapter in the *Franklin H. Giddings' Testimonial Volume*, New York, 1928.

[2] See Chapter VII.

[3] Wissler, *op. cit.*

[4] Watson, J. B., *Psychology from the Standpoint of the Behaviorist*, 1919, pp. 233–234. Recently B. Malinowski has given to cultural anthropology a more functional emphasis. See his article on "Anthropology" in the thirteenth edition of *Encyclopedia Britannica*.

in a static, spatial, or structural sense, whereas the psychologist tends to use the term in a dynamic and functional sense. It is important to stress this distinction, since the present author uses the phrase *societal reaction pattern* in a dynamic and functional sense. This has not generally been done by sociologists.

A great deal of discussion has centered around the concept of "the group" as used by sociologists. It is not our intention here to review this discussion. For purposes of this study the social group is a relational and interactional phenomenon. It has been customary to represent the group graphically by a circle and to describe the interrelationships of individuals and groups by intersecting circles.[5] For purposes of our study a pentagonal figure such as Figure 17 is more satisfactory. In this diagram, a, b, c, d, e, and f represent individuals and the dashed lines are supposed to show that each individual is related to every other individual in the group. Thus the group is in essence a psychic thing, that is, a fluctuating equilibrium of interactions and interrelationships of individuals who are in contact. It is not the purpose of this chapter to describe the interactions of individuals, but it is necessary to refer to the phenomenon of interrelationship which is described either in oral tradition or recorded in what Bernard has so well designated as externally stored neuro-psychic technique.[6] In short, the relations of individuals with one another are described in written law, and the reactions of social groups are recorded, in these days at least, chiefly in written law, which is one of the forms of externally stored neuro-psychic technique.

Whether the individual learns by a process of trial and error such as Thorndike describes or by a modification of this process in which a configuration is perceived, as the

[5] Giddings, F. H., *The Scientific Study of Human Society*, 1924, p. 236; also Chapin, F. S., "Measuring the Volume of Social Stimuli," *Social Forces*, vol. IV, no. 3, pp. 247–295.

[6] *Op. cit.*, p. 152 *et seq.*

Gestalt psychologists claim, certain it is that the group records its experiences in its mores, traditions, rules, regulations, or laws.[7] Consequently we must look to legislative records of laws adopted by law-making bodies as perhaps the most complete and objective evidence of group reaction to specific stimuli or specific situations. Let us then take for purposes of studying the reaction of groups those

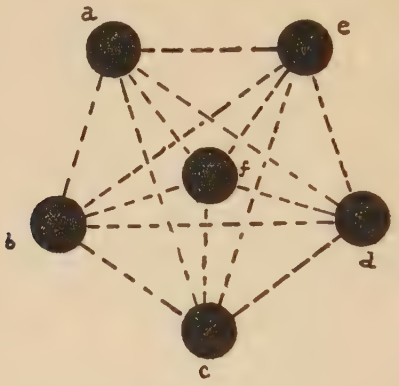


FIGURE 17

The Social Group

a, b, c, d, e and f represent individuals. Every individual is in contact with or interacting with every other individual as shown by the dashed lines of the diagram.

groups which record their reactions in rules of relationship that are externally stored in written language symbols.

2. The Hypothesis of Societal Reaction Pattern

When an outsider attempts to enter a social group there is always the prospect or danger of a disturbance of settled arrangements and the fluctuating equilibrium of relationships is imperiled. If we suppose Figure 17 represents a family group in which the individual f is in the dominant

[7] Ellwood, C. A. (*Cultural Evolution*, pp. 19, 21–22, 46–48, 50–52, 237, 253, 256, and 258) corroborates our claim in this connection although he does not present the factual evidence as we have done.

position (as father or as the dominant personality), then the entrance of a stranger into the family circle sets up a changed system of interactions and the more or less settled relationships of dominance and subordination are endangered. But, since family relationships are so much a matter of unwritten mores, let us turn our analysis upon a more complex type of grouping, in which the system of relationships is recorded in written language symbols.

Concretely we have studied the curriculum of the arts college of the University of Iowa from 1863 to the late 70s. We may consider the faculty of the arts college as recording its response to the needs of the community in its curriculum. The faculty of the arts college is a group of individuals exhibiting reactions and held together by an equilibrium of relationships presenting a system familiar to most readers. Our analysis [8] of the years in which subjects of study are offered to students shows three well-defined periods. There is first the period 1863–1867 with its curriculum of "fully prescribed courses." In this period there is a fairly set regularity as to subjects required and the years in which offered. The curriculum is like those of the known and established institutions of the East. Then a second period is evident, namely from 1868–1871, in which there is great disturbance, subjects are dropped and in some instances returned, also new subjects are offered and a general tendency to experiment as to the proper year in which subjects should be offered is clearly discernible. It is evident that pressure from without brought about dissatisfaction and a regrouping of subjects to secure proper adjustment. Courses are arranged as slightly optional, partly elective and largely elective. Finally, we observe the period 1872–1877 in which a general steadiness in the curriculum showed itself in an almost identical copying of the curriculum year after year. In 1878 an abrupt change is

[8] One of my graduate students, Mr. Irwin A. Hammer, prepared this analysis.

noted affecting the entire curriculum, and a system found already established in older colleges of the East is adopted, largely of elective courses but with majors.

Let us attempt a tentative generalization from this study in order to formulate a working hypothesis which we shall immediately apply to the interpretation of more detailed historical data. Is there any evidence of a group reaction pattern in this record of faculty activity? Yes, there is. We may formulate the principle this way:

Phase I. The group reacts by an effort to enforce its mores (the educational mores of a prescribed curriculum—a heritage from Eastern institutions). But a lack of adjustment is soon felt and a shift to the second phase of the reaction pattern follows.

Phase II. The group reacts by trying out different expedients —courses are dropped, reinstated, and new courses are added. Experiments with subjects in different years are tried out. The curriculum becomes somewhat chaotic and unsatisfactory and a shift to the third phase of the reaction pattern follows.

Phase III. The group integrates its trial and error efforts into a stable plan and later into a new system of electives with major requirements.

Let us consider whether this process of group activity bears any similarity to the learning process of the individual. The first reaction of an individual when faced by a new stimulus or situation is to react in terms of his established instinctive or habit systems of reaction. When these fail to secure adjustment to the new requirements, resort is made to random trial and error responses, characterized by considerable variety of effort and considerable waste. After a time, the more successful movements are coördinated and a new pattern of reaction is integrated—a new habit adjustment is attained. Obviously the individual learning process is not unlike the reaction pattern of the group in its broadest aspect. It should be admitted at once that this is an analogy that is only generally true and should not be fol-

lowed too far. Still it is a useful analogy because it supplies us with a working hypothesis for the further investigation of group reactions.

3. The Hypothesis of Societal Reaction Pattern Applied to the Study of Poor-Relief Legislation

The group reaction pattern is conveniently studied in the field of maintenance mores having to do with poor-relief practices because: (1) the facts are objective historical ones, and (2) there are many data available in legislative records.

The societal reaction pattern to the threat of dependency may be traced throughout the historical record of poor-relief laws, and the main outlines of an oft-repeated and fairly persistent group response is discerned. We find this societal reaction pattern operating in the history of English poor-relief. The pattern reappears in the history of poor-relief practices in Massachusetts and its outlines are again seen in the experiences of such younger states as Iowa, Wisconsin, and Minnesota.

Kelso says, "England at the end of the Middle Ages was an area of isolated towns. Each community was self-contained; as jealous of outside encroachment as the Oriental. 'Foreigners,' as all persons who did not dwell within the town were called, were looked upon with suspicion and unceremoniously warned away."[9] The village community of this period corresponds to a large primary group with settled systems of relationship that were endangered whenever wandering poor came their way.

In the middle ages relief of the poor was by private alms and was left to the church and private benevolence. There were in the sixteenth century four major sources of relief: (1) monasteries, (2) hospitals, (3) gilds, crafts, and

[9] Kelso, R. W., *The History of Public Poor Relief in Massachusetts*, 1922, p. 4; and Trevelyan, C., *England under the Stuarts*, p. 45; also Ashley, W. J., *English Economic History*, pt. II, p. 7.

fraternities, and (4) the private benefactions of the wealthy. According to the mores of the time, the purpose of almsgiving was the good of the giver's soul rather than the rehabilitation of the person in distress. It is well known that these practices were a perfect incubator of pauperism. Mendicancy and wilful dependency increased so rapidly that, with the breakdown of the old mores of almsgiving as an ineffectual group reaction, we observe a shift to the second phase of the pattern. This is seen in mistaken state (secondary group) interferences as early as 1349, 1360, and 1388, but more particularly in efforts by the governments of the several towns to deal with the situation through the local regulations in the fifteen hundreds. London, for example, tried various experiments of warning out, repression, punishment, and sundry devices of classification, between 1514 and 1576. Ipswich and York also experimented. It seems reasonably clear that the breakdown of the medieval poor-relief mores was followed by a period of trial and error which led to a chaotic situation throughout the country. These local and national measures merely aggravated the problem of dependency, and we observe a shift to the third phase of the societal reaction pattern, for, as Kelso says of the English Poor Law of 1601, it "is the culmination of this long evolution by experimentation. It is the codification of the successful municipal practices, creating nothing new, but the nationalization of those customs and their combination into a rational system of poor relief." Again, "It grew from the ruins of a group of customs in giving charity that failed; it was made necessary, not by the enclosure of corn lands, nor yet by the abolition of the religious houses,—in so far as abolition for charitable uses did take place,—but rather by the alarming growth of pauperism and beggary that sprang up and persisted in spite of the religious houses and the other instrumentalities for the giving of alms." And again, "It is fundamental to note that the system which later came to be the Poor Law of

England grew out of the practice of leading municipalities, adopted and carried on by them decades in advance of the steps finally taken by Parliament." [10]

The famous Statute of 1601, the so-called "Poor Law of Elizabeth," embodied four principles of relief which remained for 235 years without material change and in their fundamentals are still the law of England. These principles were and are: (1) responsibility of near of kin, (2) apprenticeship for dependent children, (3) work or punishment for the able-bodied, and (4) relief for those unable to work. The law thus represents an integration of the successful group experiences with dependents.

Subsequent history of English poor-relief practices indicates that when a general law such as that of 1601 is finally formulated, it soon sinks to the level of mores, exceptions to its application accumulate and the cycle of phases one, two, and three begins all over again, but on a new plane; thus we have the report of the commission of 1834, the resulting Poor Law Amendment Act, the changes of 1847, 1871, and 1894, and the National Insurance Act of 1911.

Thus the hypothesis of a societal reaction pattern that passes through three phases—first, enforcement of the mores, second, special legislation of a trial and error or experimental type, and third, the integration of successful group practices into a general law—seems to be borne out in English experience. Let us briefly consider the history of poor-law legislation in some American states.

4. Massachusetts

In colonial Massachusetts the support of the poor was a local burden for which the hamlet or parish was responsible, and the people sought to meet the old distress as their forefathers had done.[11] The village poor-law practices of

[10] Kelso, *loc. cit.*
[11] *Ibid.*, pp. 29, 48.

England were the poor-law mores of the Colonists. "Thus, for nearly a century (1620–1700), it was usual to deal with each case individually as it arose. And it was usual, also, to present the case to the entire town in regular town meeting, there to be discussed, frequently to be haggled over, and finally disposed of by some temporizing step."[12] The sense of local responsibility and its strict limitation to neighbors was strong. The burden was distributed by boarding the dependent out with townsmen, and a town cow was maintained. However, these poor-law mores of local responsibility proved ineffectual in the face of changing circumstances that brought increasing numbers of dependents; refugees driven from their homes by the Indians in King Philip's War in 1675, the coming of alien paupers and the dumping on the colonies of alien poor, the failure of inefficient and unfortunate newcomers to acquire settlement, and the dumping of convicts.

With the gradual breakdown of the old village poor-relief mores, we observe here and there as time passed evidences of a shift to the second phase of the societal reaction pattern. Towns and hamlets began to experiment with the problem of poor relief. Various forms of inhabitancy laws were tried out. "Warning out" practices were used, also procedure by approval, notice and security. Support of the town poor was bid off. The lump contract plan was tried. Almshouses were provided. As the problem became more acute and the town's remedies proved ineffectual, secondary groups (first the Province and later the Commonwealth) interfered or assumed responsibility for the burden of the poor. This phase of experimental and specific legislation exhibits the phenomenon of antagonistic group response; between primary group (town) and primary group (town) there were 300 years of village contentiousness about warning out and reimbursement; between primary group (town) and secondary group (Province or Common-

[12] Kelso, *op. cit.*, ch. V.

wealth) conflict about reimbursement provisions, investigating committees and legislative reports. Out of these years of experimental effort one notes the emergence of the third phase of the societal reaction pattern—general legislation on poor relief.

In 1863 a permanent State Board of Charities was created. It was given supervisory powers, it centralized the policy and method in the state, it decentralized administrative detail to the smallest unit of local government—the town, and it provided continuity of office for public-spirited citizens. These principles represent the successful practices of over 200 years of experimentation. The Board of State Charities, later called the Department of Public Welfare, represents an integration of these earlier experiences with dependency. Kelso says, "So successful has been the supervisory method that no jurisdiction to an equal degree, perhaps, shows such great advance in the humane and rehabilitating treatment of broken citizenship. No system is more flexible and none more economical in its administration." [13]

5. Minnesota

Turning westward, we find that the first effort to deal with dependency in Minnesota was to enforce existing poor-relief mores. The Wisconsin poor law of 1838 was the basic law for the territory of Minnesota between 1849 and 1857. The general poor law of 1864 was a copy of the laws already in existence in other states.

With increasing population and the growing complexity of an industrial order, the old law became less and less adapted to meet the needs of the situation; it lagged behind the problem of the day, and we observe a shift to special legislation. From 1858 to 1881, sixty-one per cent of

[13] Kelso, *op. cit.*, pp. 192–193.

all legislation was special,[14] and the bulk of that relating to poor relief concerned the establishment of special township systems in various counties.[15] Legislation for special classes began in 1863 with the recognition that poverty is not an isolated problem but interwoven with all kinds of other social and economic problems such as physical and mental defects, neglected children, and industrial maladjustments. Endless confusion resulted from this special legislation and the multiplicity of state charitable and penal institutions demonstrated the need for centralized administration, so that we observe again a shift from experimental group reactions, to the third phase of the pattern.

TABLE II

HISTORICAL CHART SUMMARIZING THE PRINCIPLE OF THE SOCIETAL REACTION PATTERN APPLIED TO THE INTERPRETATION OF POOR RELIEF PRACTICES

	English poor relief practices	*Massachusetts poor relief practices*	*Minnesota poor relief practices*
1300 A. D.	Phase I. Enforce mores of medieval almsgiving		
1500 A. D.	Phase II. Enact special legislation		
1576			
1597	Phase III. Enact general legislation		
1601			
1620		Phase I. Enforce village poor relief mores	
1647		Phase II. Enact special legislation	
1672			
1723			
1756			
1767			

[14] Anderson, Wm., *City Charter Making in Minnesota*, 1922, p. 13.

[15] Lundberg, G. A., *The Development of Poor Relief Legislation in Minnesota*, 1925 (Ph.D. thesis).

1794
1834
1858
1863 .....Phase III. Enact general legislation..Phase I. Enforce mores of older states
1864
1881 .....Phase II. Enact special legislation
1917 .....Phase III. Enact general legislation
1919
1921
1923

Enactment of general legislation to deal with all cases of a class or situations of a kind by centralized supervision or control began in 1883 with provision for state supervision of charities and corrections centralized in a board of six members. In 1901 the State Board of Control was formed (modified in 1921 and 1923) and County Child Welfare Boards were provided in 1917. The legislation establishing state machinery of supervision and control represents an integration of earlier experience in poor relief and dependency. The wide-spread respect accorded to the Board of Control and its policies indicates the degree to which this general type of supervision and control has become the poor-relief mores of the people.

6. Other Examples of the Principle and Summary

With variations one finds evidence of the same reaction pattern in the development of poor relief in Iowa,[16] New York,[17] and Pennsylvania.[18] The principle seems also to apply to the trend of railroad regulation in Illinois from

[16] Gillin, J. L., *Poor Relief Legislation in Iowa.*
[17] Cummings, J., "The Poor Laws of Massachusetts and New York," *Amer. Economic Assn. Pub.*, vol. X, 1895.
[18] Heffner, W. C., *History of Poor Relief Legislation in Pennsylvania.*

1860 to 1873, beginning with a favorable attitude of the farmers, running through the period of hostility of the Grange to the railroads, the efforts at legislative restriction in the 60s, and culminating in the regulative laws of 1871 and 1873.[19] The incorporation of villages in Minnesota also ran a course that began with mores copied from Wisconsin, passed through a period of special legislation until the law of 1883 provided uniform legislative means for village incorporation, and again integrated in 1895.[20]

Let us summarize our description of the societal reaction pattern.[21] Evidences of the reaction of groups to new situations are recorded in written law (externally stored language symbols). Study of these records indicates the likelihood of a definite group reaction pattern. This functional pattern falls into a three-phase sequence.

Phase I. *Enforcement* of the mores. This process is formal, inelastic, undifferentiated and indiscriminate. The lag of mores behind the requirements of a changing order creates strain toward a better adaptation of means to ends, and toward greater consistency among the mores, consequently there is a shift to the next phase of the pattern.

Phase II. *Special legislation of a trial-and-error or experimental type.* Laws are enacted to deal separately with each case. The process is particularistic, largely uncoordinated, and shows the beginnings of rational differentiation.

Phase III. *General legislation that integrates successful group practices.* Based upon study of the problem and centralizes policy and method of administration. Efficient adjustment and necessary elasticity in group response attained by new administrative machinery of a secondary group type. Use of specialized administrative personnel. Considerable range of admin-

[19] Ripley, W. Z., *Railroad Legislation.*

[20] Walker, H., *Village Government in Minnesota,* 1927.

[21] See figures in the chapter entitled "A Theory of the Societal Reaction Pattern," included in the *Franklin H. Giddings' Testimonial Volume,* New York, 1928, for graphic summary of the principle.

istrative discretion rather than minute mechanical regulation. High element of personal responsibility. Result: integrated, coördinated, highly differentiated, discriminating, and elastic group response made possible.

In time, this general reaction with its mechanism (general legislation and machinery of administration) becomes absorbed into the primary mores, tends to become formalized (bureaucratic) and crystallized, and lags behind new conditions. This brings the group to the same sort of situation it faced at the outset and the three-phase cycle begins all over again, and so on *ad infinitum.*

It may be said in criticism of this hypothesis, that the long span of time in which the pattern unfolds itself cannot be referable to the constant and continuous identity of a responding group. This is a criticism that deserves attention, but, in default of additional data as a test, it may be said that in the case of an animal organism learning a new habit, even this organism undergoes organic and structural changes during the learning period. It would therefore seem that it is a relative matter. Another criticism of the hypothesis is that the third phase results in a modification of structure much more profound than the analogue of animal learning. This is true, but again it is a matter relative to the stability of the main structure of the group.

Finally, whatever limitations may be set by scientific criticism to the interpretation of cultural change in terms of a societal reaction pattern, it should be noted here that if the cultural process is indeed a learning process as Ellwood [22] and the present author contend, then the theory presented in this chapter describes the outlines of the pattern in such definite fashion that further research will be possible to prove or disprove the theory.

[22] *Op. cit.*

CHAPTER IX

POWER MACHINERY AND CULTURAL CHANGE

IT is a far cry from the rough stone Acheulian *coup de poing* of perhaps seventy-five thousand years ago to the highly complex machine tool of to-day, with its hundreds of standardized steel parts fitted to a thousandth of an inch; and yet cultural change spans this striking range of difference. The primitive stone tool and the intricate steel machine are after all things of a kind, mental patterns projected from the mind of man and embodied in material substance, artifacts, superorganic [1] products!

Living as we do in a socio-economic environment consisting of vast arrays of artifacts which stand between us and other human beings, and between humanity and its physical environment, we easily forget that the multitude, variety, and intricacy of these machine artifacts are the creations of contemporary times. The application of power machinery to agricultural production, to manufacturing industry, to transportation and to communication has been accomplished in less than 200 years. Never before in the long history of mankind has there occurred such a sudden and transforming change in material culture.

The interdependence of such phases of culture as the tool, the language symbol, and the social institution, has been recognized in theory but not in practice; consequently men have for the most part failed to realize the tremendous reverberation of machine invention throughout the length and breadth and the height and depth of a socio-economic structure which has its roots in the relatively simple cul-

[1] Kroeber, A. L., "The Superorganic," *American Anthropologist*, vol. 19, no. 2, April–June, 1917.

tures of medieval times and the preceding civilizations of Greece and Rome. It will be our purpose to show that in our day the institution of industry everywhere reflects the influence of the machine.

1. The Industrial Revolution

In the latter part of the eighteenth century there began to take place a momentous change in industrial methods which was accomplished with comparative rapidity in England, although the full effects of the revolution came more slowly in other countries. But this industrial revolution was of far-reaching importance for the whole civilized world, since it involved a complete transformation of manufacturers and an abrupt break with much that had gone before.

While many influences combined to bring the revolution in industry to England before it came to other countries, there were three conditions which appear to have been of paramount importance in effecting the change. There was a relatively greater abundance of capital and skilled labor in England than in France or Germany in the eighteenth century. We have already had occasion to note the extension of woolen manufacture in England, an extension accompanied by a widened control over domestic industry by the merchant-manufacturers who provided the raw materials, often owned the tools of the trade, and paid the combers, weavers, dyers, and fullers for their labor. Finally, the early appearance and rapid development of mechanical inventions in the field of textile manufacture was an essential in working the change from the old to the new. In varying degrees, then, these three conditions favored the transformation from the domestic system to the factory system of industry.[2]

The early and rapid progress of mechanical invention in

[2] Ogg, *op. cit.*, pp. 83–84; Gibbins, *op. cit.*, p. 341.

England seems to have been a result of the constant expansion of commerce and the steadily increasing demand for English-manufactured goods for export, in combination with the practical turn taken by English genius in the eighteenth century. England had secured almost a monopoly of the markets of the world by her monopoly of the seas. She built up her great marine empire by certain mercantile policies of a restrictive nature. The sixteenth and seventeenth centuries witnessed an extension of national economy and state regulations which superseded town and local economy and aimed to secure increased national power and wealth. The growing importance of a regular military establishment as the basis of national power necessitated great supplies of gold and silver with which to maintain national influence. In the absence of domestic resources in precious metals, statesmen sought to amass treasure by a "favorable balance of trade," in which the value of national exports exceeded the value of national imports. Consequently, a great system of restrictive legislation was created to secure this favorable balance of trade, and we find laws encouraging the importation of treasure, prohibiting the exportation of treasure, generally discouraging import trade, generally encouraging export trade, favoring industries which produced for export, and restricting the importation and exportation of goods to English-built and manned vessels. Although England's persistence in the enforcement of these latter "navigation acts" lost for her the monopoly of a chief market (the American colonies), her policy of restriction made her supreme upon the seas and in the other markets of the world, so that demand for her manufactured goods became intense enough to stimulate industrial competition and arouse the inventive abilities of her workers. We shall now consider the conditions under which this burst of mechanical invention occurred.

The inadequacy of domestic manufacture. On the eve of the revolution, the increased demand for English-manu-

factured goods was still supplied by the antiquated methods of domestic industry. Although foreign trade had increased enormously, industrial organization remained the same as it had been for more than two centuries. Cotton and woolen cloth were still produced in the scattered cottages of domestic weavers and weaver-farmers who still used the hand-card, the old-fashioned spinning-wheel, and the cumbrous hand-loom. Primitive conveyances were used to collect[3] the finished goods from the domestic shops in the hamlets and towns, and to deliver them at the seaports.

The extent to which the increased demand for manufactured goods pressed upon these inadequate methods of production is revealed by a study of the process of cloth-making in its details. The raw material of the textile industry, whether it was wool from sheep, the boll of the cotton, or the crushed stems of flax, was a tangled mass of fibers. The first requisite was to straighten out the threads of this fiber by combing or carding. This process was done by hand under the domestic system. The second step was spinning. This involved drawing out the fibers which the first step had separated, until they formed a slender cord, meanwhile twisting the fiber-cord sufficiently to cause the separate fibers to take hold upon one another, thus making a thread of greater strength. This process was done either on the old high wheel, whirled by hand and wound on the spindle, or on the old-fashioned spinning-wheel, operated by a treadle, while the material was drawn out by hand, and twisted and wound upon the flyer. The third step was weaving. For this process, it was necessary to select firmly spun threads for the "warp" or upright threads, and soft, or loosely spun threads for the "woof," or "weft." This was wrapped on a shuttle, and thrown by hand between the two diverging planes of warp-threads. The weaving process was

[3] " . . . the high road between Preston and Wigam had, even in summer, ruts four feet deep, floating with mud; and in many parts of the country the principal means of communication were tracks used by pack horses." Hamilton, *op. cit.*, p. 100.

followed by processes of finishing, fulling, shearing, and dyeing, according to the kind of cloth desired.[4]

In order to keep a continuous supply of materials flowing through the successive steps in these processes of manufacture, it was necessary to secure a close articulation of the various stages. It was just here that the system broke down as a means of supplying the growing commercial demand, for spinners could not keep the weavers supplied with enough thread to permit their meeting increased orders for cloth. Under the domestic organization of industry, spinning was done by women and younger children in the home, with the antiquated spinning-wheel. The rate at which they could produce sufficient thread to keep the weaver constantly busy required a ratio of about six spinners to one weaver. Naturally this proportion of labor was not always found, and it was frequently necessary to hunt up outside help to relieve the pressure on the spinners. This necessitated delays and inconveniences. The lack of adjustment between the supply of spun material and the demand for it on the part of weavers was still further accentuated by the invention of Kay's drop-box and flying-shuttle in 1738, which permitted one man to sit still and throw the shuttle to and fro by alternately pulling two cords, thus eliminating the need for more than one person in operating the loom. No corresponding change had been introduced which would accelerate the process of spinning.

So keenly felt was this need for better spining processes that the Royal Society offered a prize for the invention of a machine that would spin several threads at the same time. Although this reward was never claimed, a series of brilliant mechanical inventions appeared shortly after the middle of the eighteenth century, and, as soon as the manufacturing difficulties which we have enumerated were overcome, production increased by leaps and bounds.

Mechanical inventions and machine power. It is hardly

[4] Cheney, *op. cit.*, pp. 205–206.

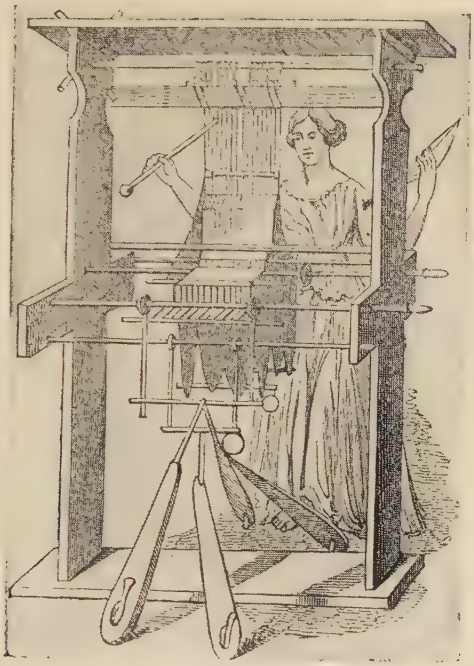


FIGURE 18

A Loom of the Sixteenth Century

possible to exaggerate the importance[5] of these fundamental inventions,[6] for they "explain the world in which we live, with its busy cities, its gigantic factories filled with complicated machinery, its commerce and vast fortunes, its trade-unions and labor parties, its bewildering variety of plans for bettering the lot of the great mass of the people. The story of the substitution for the distaff of the marvelous spinning-machine with its swiftly flying fingers, of the development of the locomotive and the ocean steamer which bind together the uttermost parts of the earth, of the perfected press, producing a hundred thousand newspapers an hour, of the marvels of the telegraph and the telephone —this story of mechanical invention is in no way inferior in fascination and importance to the more familiar history of kings, parliaments, wars, treaties, and constitutions."[7]

Inventions were first introduced in cotton manufacture, and applied to the spinning process, which we have observed was already out of adjustment with the weaving process. In 1770 James Hargreaves, a Lancashire weaver, patented the "spinning-jenny," a machine which he had completed in 1764. The device was a simple one. It consisted of a frame with a number of spindles side by side, each spinning a separate thread, and the whole row operated by a band from one hand-wheel. Thus it became possible to spin eight,

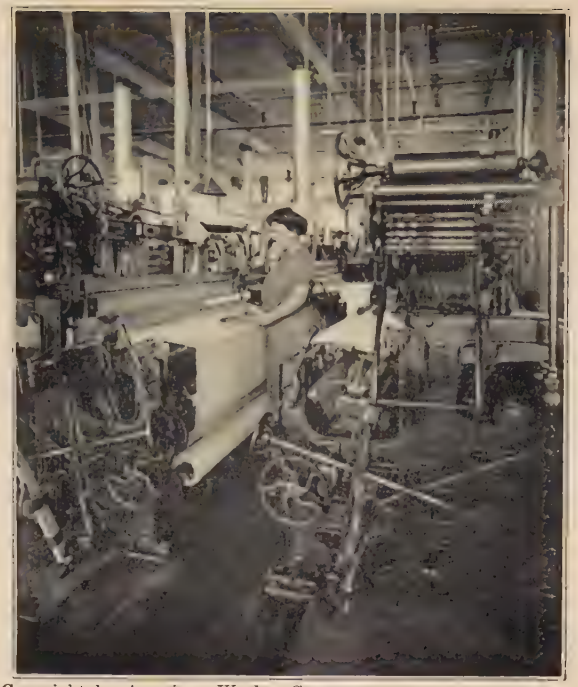
[5] It is worth noting that Hamilton, *op. cit.*, pp. 103–107, holds a contrary view. He claims that the "great inventions" were merely events that accompanied basal changes in the scheme of social values, and a disturbance of the existing equilibrium between population, technique, and natural resources, occasioned by the discovery of the New World with its natural resources. He contends that the movement was not industrial and not a revolution. Viewed in the range of 300 years backward and forward this opinion is perhaps true, but viewed in the larger perspective of man's great antiquity there is justification for regarding the cultural changes occasioned by the "great inventions" as both industrial and a revolution.

[6] In Chapter XI, we make a distinction between fundamental and supplemental inventions.

[7] Robinson, J. H., and Beard, C., *Development of Modern Europe*, vol. II, p. 31.

twenty, and even thirty threads at once, instead of the single thread in the old-fashioned spinning-wheel. By the use of this machine, it was now possible for spinners to supply easily the wants of weavers. But shortly afterwards, a new and more effective spinning device was brought to perfection by Richard Arkwright. This patent spinning-machine, or "water-frame," imparted an unusual firmness to the thread by passing the carded material through successive pairs of rollers, each pair revolving more rapidly than the last, thus stretching out the thread to any required fineness and strength. Thread made by this machine was firm enough to be used for warp. Prior to the introduction of this process, linen had to be used as warp, because cotton thread had never been made strong enough, but now the practicability of all-cotton cloth was demonstrated. This machine marks another significant step in the direction of the factory system, for the cumbrousness of the mechanism made it ill-adapted for cottage industry, and practically required the use of water-power. Finally, in 1779, Samuel Crompton succeeded in combining the principles of the Arkwright and Hargreaves machines, and produced the "mule," which spun very fine cotton thread and made the manufacture of muslins possible. This machine drew out the raw material which had received its first twist (the roving) by an adaptation of the water-frame, and then passed it on to be finished and twisted into complete yarn by an adaptation of the spinning-jenny.[8] The mechanism has now been improved to such an extent that twelve thousand spindles may be worked at once by one spinner. By 1811, there were more than four and a half million spindles worked by "mules" in English factories. The comparatively sudden and remarkably powerful stimulus given to English textile industry by these inventions was accelerated by the invention of the cotton-gin in 1792, a device which

[8] Baines, E., *History of Cotton Manufacture in Great Britain*, London, 1835, p. 198.



Copyright by American Woolen Company.

FIGURE 19

Modern Weaving

Photograph by U. & U.

FIGURE 20

Great Beams Passing through Rolls in a Steel Mill

opened up for commercial uses an enormous supply of raw cotton which had hitherto been unsatisfactorily cleaned by hand methods.

It will be observed that these inventions affected the spinning process and increased the output of spun materials, yet no corresponding improvement had been made in the weaving process. Consequently the weavers now lagged behind, and were not able to utilize the greatly increased supply of thread to meet the demand for cloth goods, for Kay's shuttle had been the last advance in the weaving process. It was not until 1785 that a Kentish clergyman, Cartwright, patented his "power-loom," a machine which performed the same sort of service for the weaving process that the spinning inventions had performed for the spinning process. Although the principle was right, the machine did not begin to be much used until 1823. But, once adopted, this machine caused the disappearance of domestic hand-weavers, as the other inventions had abolished the hand-spinners, and soon the factory system was in full operation.

At first, water-power was used to operate these heavy-running mechanisms. But this sort of power was not always sufficient, or available, and the discovery of some other source of motive power was necessary before the revolution in manufacturing processes could be completed. This need was finally met by Watt's steam-engine, patented in 1769, but not introduced into factory manufacture until 1785. During the fifteen-year period, 1788–1803, the cotton trade trebled, owing to the introduction of these improved industrial processes.[9] But it should be noted that mechanical inventions were first introduced into cotton manufacture, only subsequently into woolen manufacture, and then irregularly into other manufacturing processes—that is, improvements were not introduced into all fields at once.

[9] Toynbee, *op. cit.*, p. 90; see also Hobson, J. A., *The Evolution of Modern Capitalism*, London, 1901, 2d ed., pp. 59–60.

Nevertheless, the industrial revolution proceeded, on the whole, with a rapidity quite remarkable in view of the comparative absence of innovations in industry during medieval and ancient times.

The factory system. The introduction of mechanical inventions at first undermined and then superseded hand methods of manufacture, transforming industrial processes from relatively simple activities which produced small quantities of goods into huge and complex organizations which produced enormous quantities of articles. Large numbers of wage-earners were brought together in capitalistic-owned establishments in which costly and elaborate machinery was operated by artificial motive power.

An examination of the nature of machinery reveals the true causes that were at work transforming domestic industry into the factory system. The machines of Arkwright, Crompton, and Cartwright, and the improvements effected thereon, were far too costly for the old cottage-weavers to buy and use. The purchase and installation of these machines furnished a new and profitable field for the investment of capital,[10] so that we find the moneyed men from the towns drawn into partnership with the early machine-spinners and weavers. Besides the obstacle presented by the cost of machinery, the artisan's cottage was too small and poorly constructed to hold machinery which required space and strongly built walls.[11] This was an added reason for abandoning home-manufacture and for erecting a special establishment to house monstrous machinery. Finally, human power was inadequate, and water or steam-power, which entailed the organization of a considerable body of laborers as well as the purchase of expensive ma-

[10] Forrest has pointed out that the function of capital is of the same kind now as it was before the invention of power machinery, but the quantitative difference is so great as to make industrial capitalism virtually a new phenomenon. *The Development of Western Civilization*, Chicago, 1906, pp. 331–338.

[11] Taylor, C., *History of the Factory System*, p. 422.

chinery in addition to that employed directly in manufacture, could not be provided in home-manufacture. These then are the reasons, inherent in machine-manufacture, which necessitated a new industrial organization—the factory system.

As one writer says: "What the great inventions did for the factory was to change the relation of hand-work to mechanical assistance. The tool and the machine-tool are under government of the hand. It is the worker who supplies the force, and the tool which obeys; but, after the great inventions, the position of the worker in the modern factory came to be that of assisting the machine, rather than that of supplying the energy to the hand or machine-tool. There were factories before the inventions of Watt, Crompton, and Cort, but the 'factory system' of the nineteenth century implies specially a subordination of the worker to the machine, which justifies us, if we look at the change over a long period, in speaking of the effect as a revolution." [12]

Mechanical production is said to date from the middle of the eighteenth century, not because there were no machines prior to this time, but because industry then experienced a vast acceleration in the invention of a complex machinery applied to industrial arts, and because there occurred for the first time the application of non-human motor-power upon an extensive scale.[13] The earlier machines multiplied the output of processes once done by hand, while the later machines not only increased production, but combined into one continuous operation the different processes of manufacture once performed by different groups of individuals with different tools. In modern machinery the sewing-machine illustrates the latter, as the knife-cleaning machine illustrates the former. Hobson defines a machine "as a complex tool with a fixed relation of processes per-

[12] Macgregor, D. H., *The Evolution of Industry*, London and New York, 1911, p. 40.

[13] Hobson, *op. cit.*, pp. 45–50.

formed by its part." Machinery increases the motive power at man's disposal by applying the forces of man and nature in a more effective manner through the use of various mechanical contrivances. For example, the substitution of mechanical for human power is made and also the substitution of cheaper for dearer kinds of power. Finally, the application of machinery is extended to the utilization of waste in natural and manufacturing processes.

The growth and extension of machine manufacture and the factory system from industry to industry was accomplished by four essential steps. First, the introduction of automatic machinery as a supplement to, or a substitute for, hand labor. This began in the manufacture of cotton and woolen cloth. The second step was taken when steam was applied as the motive force to drive this machinery. Manufacture was now freed from geographical restrictions set by the location of natural resources in water-power, and factories could be built at strategically situated commercial centers. But, as long as methods of transportation remained slow and cumbrous, the factory system could not expand to meet the demands of distant markets. When, however, in the nineteenth century the steamship and steam railway were invented, it was possible to send manufactured products cheaply and rapidly all over the world, and the factory system soon extended to a variety of industries. The final condition determining the growth of the factory system was the enlightened encouragement of patents in the nineteenth century.

With these four conditions assured, mechanical invention was stimulated, and the factory system spread from one industry to another. This growth is marked by such important inventions as the planing-machine in 1802, the circular wood-saw, introduced in the United States in 1814, galvanized iron in 1837, vulcanized rubber in 1839, Howe's sewing-machine in 1846, watch-making by machinery in 1850, the Bessemer process of making steel in 1855, paper

made from wood-pulp in 1864, the McKay shoe-sewing machine in 1861, the Siemens-Martin open-hearth steel process in 1866, and the roller-mill and middlings-purifier for making flour in 1875.

Beginning in England in the later eighteenth century, the factory system was not widely adopted in the United States until 1840, and it spread to Germany only in the latter part of the nineteenth century. It has now been introduced into India, Japan, and China. The reverberation of machine-production on handicrafts is seen wherever Western civilization comes into contact with primitive economic organization, for the handicrafts are always demoralized by the enormous volume and cheapness of machine products.

Social and economic effects of the factory system. The great though silent revolution in industrial processes and organization initiated by the application of mechanical contrivances and non-human motor-power to methods of production wrought fundamental and far-reaching changes in social organization, changes which came so rapidly that adjustment to the new conditions is still imperfect, and even to-day there are many intelligent persons who fail to understand their true significance.

Perhaps the most general change resulting from the factory system has been the striking redistribution of population effected in all industrial nations, the transfer of population from rural to urban conditions. In England, the change was two-fold: population shifted from southern to northern sections of the country, and from the rural regions to the towns and cities. The growth of population in the north was chiefly due to the utilization of the coal-fields for fuel with which to turn the new machinery in the factories.[14] The transfer of population was accompanied by a striking rapidity of growth; for the population of England, which had been 6,736,000 in 1760, had risen to

[14] Gibbins, *op. cit.*, p. 349.

12,000,236 in 1821,[15] an increase of eighteen per cent for the period 1811 to 1821 alone.

An important aspect of the redistribution of population was the change from rural to urban living conditions. The old domestic manufacturer, half farmer, half artisan, disappeared before the competition of machine-made goods. Factory methods of production so cheapened the price that goods would bring that it was no longer profitable to carry on industry in the home. For example, spun yarn that was worth 38s. in 1786 had declined to 19s. in 1796, and to but 7s. 2d. in 1806. The wages of hand-loom weavers also declined, and we find the weavers of Bolton earning only 5s. 6d. a week in 1830, when they had received wages of 9s. in 1820, 19s. 6d. in 1810, and 25s. in 1800.[16] The effect of this loss of remunerative by-employment, accompanied by the agricultural changes of the enclosure system, was quite disastrous for the rural farmer-artisans. Although the desperate struggle against the new conditions was kept up for a whole generation, this sturdy class gradually died out, and there was an exodus of labor from the country with a corresponding growth of towns.

One of the serious consequences of this loss of by-employments was the change wrought in living conditions. The laborer no longer lived in a village where he could vary the monotony of his manufacturing work by a little gardening and work in the fields. The hum of the spinning-wheel grew silent in the cottage, and the weaver no longer breathed the fresh scents of hay and harvest in the country air.[17] The weaver ceased to use the product of the spinning wheels run by his wife and children; he bought yarn from the factory. For the freedom and independence of the old life had been substituted rigid factory hours, and workers

[15] Gibbins, *op. cit.*, p. 349, and *Statistical Journal*, vol. xliii, p. 462.
[16] Cheney, *op. cit.*, p. 220.
[17] Gibbins, *op. cit.*, pp. 385–386.

came and went at the sound of a bell. Contemporary evidence of the new order of things is contained in a description of the country around Manchester, published in 1795 by Dr. Aikin, who says of the changes in domestic life: "The females are wholly uninstructed in knitting, sewing, and other domestic affairs requisite to make them frugal wives and mothers. This is a very great misfortune to them and to the public, as is sadly proved by a comparison of the laborers in husbandry, and those in manufactures in general. In the former, we meet with neatness, cleanliness, and comfort; in the latter, with filth, rags, and poverty." [18]

The laborer now lived close by the factory where he and his family worked all day long amid the smoke and the grime of great fires and the ceaseless din of iron and steel machinery. With the introduction of steam-power, the old water-power mills in remote localities gave way to large establishments in strategically located towns and cities. It became necessary to have all the work-people close together in one large building, on account of the fact that steam could only be generated in a fixed spot, and the motive power supplied for a limited area. But there were certain economies in administration and management which such concentration afforded. For example, in cotton manufacture it was convenient to carry on the work of carders, spinners, and weavers in close proximity. In addition, there were advantages of management which accrued from nearness to markets for raw material, finished product, and labor supply, that made concentrated work economical. Thus the typical unit of production ceased to be the single family, or small group working with simple tools upon small quantities of material, but came to be a compact unit composed of hundreds, and sometimes thousands, of work-

[18] Quoted in *The History of the Factory Movement*, vol. 1, p. 11, by "Alfred" (Samuel Kydd). The more recent aspects of cultural changes in the family institution occasioned by the invention and application of power machinery will be discussed in Chapter X.

men closely associated in a coöperative activity, operating intricate machinery in large establishments, and turning out enormous quantities of goods.

The first factories were hastily constructed and without adequate provision for lighting, ventilation, or sanitation. There was a great prevalence of fevers among employees in cotton mills because of the utterly unsanitary conditions under which they worked. Although the cottages in which domestic industry had been carried on were undoubtedly small, hot, dusty, damp, and unhealthy, relief was to be had by gardening and farming; but the prevalence of these same conditions in the mills was a much more serious matter, for men, women, and children worked regularly many more hours a day in the factories—twelve, thirteen, and even fourteen. There were no arrangements for the preservation of health, comfort, or decency among the working classes, which were composed of men and women, adults and children. As for the children, "they slept by turns and relays in filthy beds which were never cool; for one set of children was sent to sleep in them as soon as the others had gone off to their daily or nightly toil. There was often no discrimination of sexes; and disease, misery, and vice grew as in a hotbed of contagion." [19]

Relief from the intolerable conditions under which factory labor was carried on was not to be had upon the homecoming of a tired worker; for the rapid increase in urban population had brought about congested living conditions. The "home" of the mill-hand was sometimes a damp cellar, or more frequently a small and dark tenement. Under the pressure of population crowded into such narrow limits, the old arrangements for providing water, drainage, and ventilation, broke down completely. Rents rose, and the factory towns became filthy and demoralizing centers of life.

When we examine the inherent characteristics of ma-

[19] Gibbins, *op. cit.*, pp. 389–390.

chine production and the factory system, we discover that the change from hand-production to machine-production has had certain subtle effects upon the organization of labor. The decay of the domestic system and the substitution of machinery for hand-labor was not, however, always accomplished in a quiet and peaceable manner. The introduction of machinery was followed by disadvantages to the artisan of such an obvious and immediate nature, that riots against its installation were frequent in the early years of the industrial revolution. The gain which machine-production promised was cheap goods at some future time, and this was not a satisfactory compensation to the laborer who lost employment through the introduction of labor-saving machinery. Hence there came fierce revolts against the new devices of manufacture. Much machinery was destroyed during riots in 1812, 1816, and 1826. Wherever the substitution of machinery for hand-labor occurred rapidly, there was great distress, but in those fields in which the change came gradually there was much less misery. The substitution of new for old methods progressed irregularly, and it was not until 1840 that wool-combing by machinery really threatened the hand-worker and began to drive him from the field.

These fierce ourtbursts against the new order of things should not blind us to the great significance of the thoroughgoing change that was transforming the very basis of manufacturing industry. Highly specialized routine labor, adjusted to machinery, was largely replacing the all-round skill that the apprenticeship system of handwork had produced. Under the handicraft system of the middle ages, as organized in the craft gilds, the workman followed the raw material through the various stages of manufacture until it took on the form of a finished product. He knew all the steps in the process, and took pleasure and pride in his workmanship. Under the factory system, the average workman performs only one minor act in the process of produc-

tion, perhaps throwing a lever back and forth, or his particular task may be to guide a machine which accomplishes some intermediate step in the series, and so he may never see the raw material, or even know for what the finished product is to be used. A few illustrations will serve to make the matter clearer.

The manufacture of such a simple product as pins was in 1776 divided into eighteen distinct operations. It required five distinct operations, each performed by an independent workman, to draw, straighten, cut, point, and put on the head; two or three separate operations to make the head; and the putting on of the head, the whitening of the pins, and the sticking of the finished pins in the paper package, were peculiar businesses in themselves.[20] The manufacture of a shoe in some New England factories of to-day requires 173 different operations, each conducted by a class of laborers with a special name. In the making of a modern high-grade watch, at least 1088 different sets of workmen, aside from the operations of furnishing the power, each using a different kind of machine, are employed. In the typical cotton-mill of to-day, the division of labor embraces more than 98 different occupations. One man can operate from six to twelve machines in the manufacture of screws, and the ratio of machine to hand production is 4491 to 1. There are no less than 39 distinct processes in the manufacture of ready-made coats as now carried on in New York.[21]

But perhaps the most modern, as well as in some respects the most typical, case of the division of labor which accompanies the factory system is seen in the great automobile factory of Henry Ford at Detroit. John A. Fitch, writing in *The Survey*,[22] thus describes the remarkable organization of labor and machinery which permitted the produc-

[20] Smith, Adam, *The Wealth of Nations*, in Macmillan's Economic Classics, p. 6, of bk. I, ch. i.

[21] Seligman, *op. cit.*, p. 293.

[22] February 7, 1914, p. 545–650.

tion of 605 complete automobiles in four hours on January 24, 1914:

"'They don't just produce automobiles at Ford's,' a man in another Detroit factory remarked, 'they spew them out.' Fifteen thousand men work in gangs on the track system. Each gang, and each man in each gang, has just one small thing to do—and to do it over and over again. It's push and hustle and go. The man behind may shove his work along to you at any moment—you must not hold him back; at any moment the man in front may be ready for another piece to work on—he must not be kept waiting.

"Up one line and down another goes a continual stream of motor parts in process of assembling. One man fits the parts together so that the bolt holes come right. The next man slips the bolts in place. The next has a pan of nuts before him and all day long he scoops them up and with his fingers starts them on the thread of the bolts. The next man has a wrench and he gives them the final twist that makes them tight.

"Over in another part of the great factory there are four or five parallel tracks. On every track are a dozen automobiles in all stages of being put together. Each is slowly moving from one end to the other, and—like a snowball rolling down-hill—gathering itself together as it travels, until with a snort and a whir it dashes out at the door on its own power.

"The last of these tracks is formed by moving belts. Without a stop from start to finish the machine moves steadily forward on the belt, and, either sitting on different parts of it or walking alongside for a moment, each man adds the bolt, or gives a turn to the screw for which he is responsible. One fellow has to lie on his back underneath and hammer away at something. He has a little platform on wheels to support him and with a bent rod he 'hitches on' the front axle. 'Bing, Bang,' instantly he lets go and drops back to hitch on to the next machine.

"Piled up along the way are the different parts, each to be added as the growing machine passes by. Each man does his part, and gives it a shove. First, to a mere skeleton of a frame, two men attach the rear axle. They fasten it in haste and give it a push—some one else will tighten the bolts. Three men seize it and in a moment the front axle is in place and the four wheels put on. It's easier to move now; a touch sends it on to another gang of three, who put on the truss-rods and tighten things up all round.

"Another shove, and it goes to where a motor is dangling from

chains, directly over the track. A word from some one and down comes the motor to its place, and bolts go in and on goes the machine. Then comes the steering gear, and the control levers—on again, and from overhead a hose is pulled down and a gallon of gasoline squirted into the tank. One more shove and the rear wheels drop into a slot where there are rapidly revolving pullies. The wheels begin to whirl—the motor starts—a man seats himself on the tank, grasps the wheel and cuts loose, and with a snort and a cough, out the door they go. What was, ten minutes ago, a pile of rods and gears and lifeless steel is now thrilling with power. A car came through that door every twenty-four seconds Saturday morning, January 24. . . ."

For years Ford enjoyed supremacy in the production of low-priced motor cars. In 1926, other automobile manufacturers demonstrated successfully that a low-priced small car could be built on beautiful lines. Immediately Ford began to feel the effects of this competition, for the people wanted their small and cheap cars to be attractive in appearance as well as serviceable. Early in 1927 Ford shut down his great plants and all sorts of rumors were rife. Something of the extent of what was then done is evident when it is remembered that ". . . With every tool and fixture fitted for the production of a single product, every part standardized to the minutest detail, more than fifty per cent of the production machinery has had to be replaced, redesigned, or supplemented by additional equipment. As an illustration, one hundred and sixty-six gear generating machines were completely rebuilt, at a cost per unit of $3,000, to produce two gears included in the new rear axle. More than 43,000 machine tools had to be altered, more than 50 per cent of these rebuilt; 4,500 new ones bought or built. Five million dollars went into new dies and fixtures alone, $22,000,000 into factory preparations before the first car came off the line." This quotation from Paul U. Kellogg[23] indicates what a veritable "industrial revolution" occurred in the

[23] "Henry Ford's Hired Men," *The Survey*, vol. 59, no. 9, Feb. 1, 1928, pp. 549–557, 593–596.

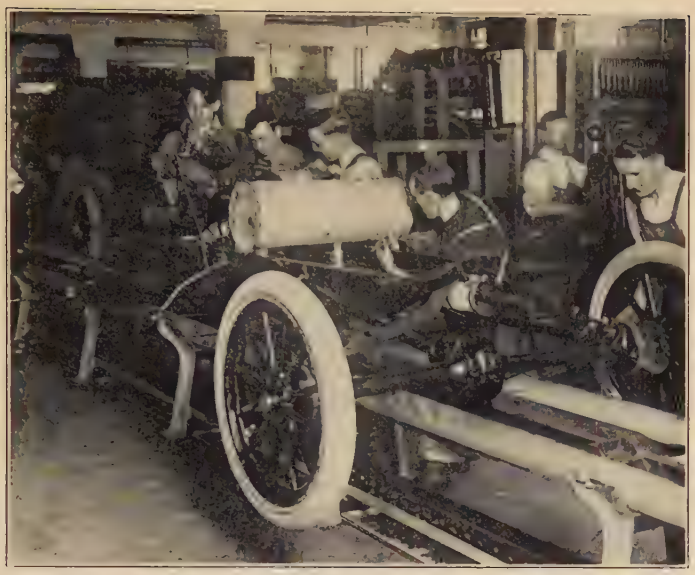


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FIGURE 21. Putting on Wheels, Gas Tank, and Muffler

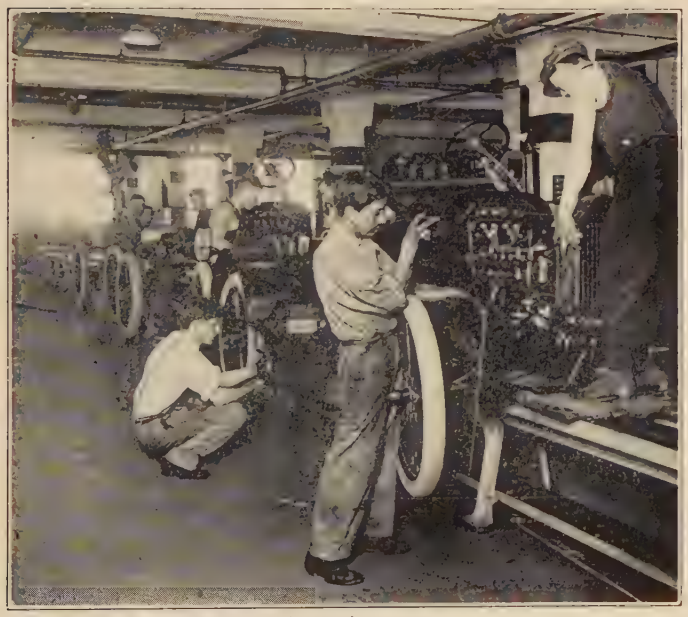


Photo from Underwood & Underwood.

FIGURE 22. Putting on Dash and Fenders
Assembling Department of Ford Motor Company

Ford industries during 1927 in order that this great manufacturing enterprise might prepare itself to meet competition on a new plane where the esthetic as well as the utilitarian element was demanded.

The new model Ford car is built in the same way as the old Model T, that is, on assembly lines, with the central idea that of sequence, as we have described it in the preceding pages. The new model has called for new precision of manufacture so that the crudity of the old sequence on the endless belt plan has been complicated by the addition or substitution of involved sequences of assembling parts and putting them together. It has been estimated [24] that the new Model A would cost $10,000 if made entirely by hand. But the working capacity of each man has been multiplied at least one-hundred-fold by thousands of automatic power-driven machines that bore, drill, plane, grind, and press with tireless precision. In spite of the fundamental adjustments in machinery, factory organization, and management, the new Ford car was produced at a rate of 1,000 completed cars a day in January, 1928.

Reitel [25] has pointed out that the first processes in the automobile industry to be transferred to automatic machines were operations of cutting, bending, and shaping; next mechanical feeding replaced hand feeding; then conveyors, endless belts, and slides were introduced; and finally, came the building of machines in batteries. Gigantic new machines which spin steel and eliminate most castings [26] have been introduced in the Ford plants and illustrate the fourth stage of transfer from human skill to machine accuracy.

This minute specialization of process permits the employment of unskilled labor, for the machine accomplishes by automatic precision the same result that human patience

[24] Kaemffert, W., in *New York Times*, Dec. 18, 1927.
[25] *Annals of the American Academy of Political Social Science.*
[26] *Ford News*, vol. 8, no. 5, Jan. 15, 1928.

and skill once attained. Under these circumstances, the old interest in producing good work disappears, for the laborer loses that intimate association with all the different stages in the process which encourages a feeling of responsibility for the quality of the product. Says Ferrero: "Machines are the barbarians of modern times, which have destroyed the fairest works of ancient civilizations." [27]

Another aspect of the extreme division of labor under the factory system, with its specialization in productive activities, is the demoralizing effect of monotonous routine labor. Shoving bolts into holes, and doing nothing else all day long for a ten-hour day, is productive of dulled senses and set habits of mind and body Specialized work in which activity is of a trivial sort tends to destroy individual plasticity, and the workman loses his power of quick adaptation to new conditions. Under these circumstances, it is not easy for a laborer to make the change from one employment to another when he is thrown out of work by industrial depressions which result from over-production, or to adjust himself to another job when his old one has been cast aside and made useless by the introduction of new labor-saving machinery. It is the old experience of biological evolution reappearing in industrial activities, the extinction of the highly specialized. It means that the middle-aged workman who has spent his best years in some highly specialized industrial activity is suddenly thrown upon the scrap-heap by the introduction of new machinery, at a time when his social and family obligations are heaviest. For the young and alert of limb, the minute standardization of operations permits a comparatively quick acquisition of skill, with a consequent possibility of rapid movement for workers between industries. But not so with the mature worker. The years of monotonous and uninteresting employment have deadened his initiative and ability to turn

[27] *Ancient Rome and Modern America*, p. 6.

about and acquire new coördinations; and unfortunately this type of laborer represents the majority.

When the domestic system became the characteristic type of industrial organization, the workman lost control over two parts in the process of production, the purchase, or procuring of the raw material, and the selling, or disposal of the finished article. To this extent, he was less independent than under the handicraft system, although he was still able to control the hours and conditions of labor, because he still worked in his cottage. But with the coming of the factory system, opportunity for creative effort as well as ownership of tools and place of work passed from the control of the laborer. He became a hired hand, a wage-earner, working with tools (machinery) provided by the capitalist in a specially constructed establishment (factory), upon material which he did not own and which his labor helped to turn into some finished article which he might never see. Thus the old personal relationship of the workman to the processes of production disappeared, and he was unable to regulate his hours or the conditions under which his labor was carried on. It was a serious thing, this loss of personal freedom, this growing economic dependence of a large mass of laborers upon a small class of capitalists. It created a social situation which somewhat radical thinkers have with considerable justice called "wage slavery." But this consideration brings us to the study of another important effect of the factory system.

A thoroughgoing differentiation of the industrial classes of capital and labor was another consequence which followed the introduction of the factory system. In the days of the handicraft system in antiquity, and under the craft-gilds of the middle ages, the difference between employer and employee in the industrial field was not great. The master worked with his apprentices and journeymen, participating with them in the processes of production, sharing

their privations and their comforts, although he possessed authority over them and paid them wages. Much the same situation existed under the domestic system. But with the factory system came hard and fast differences between employer and employee. The ownership of materials, tools,

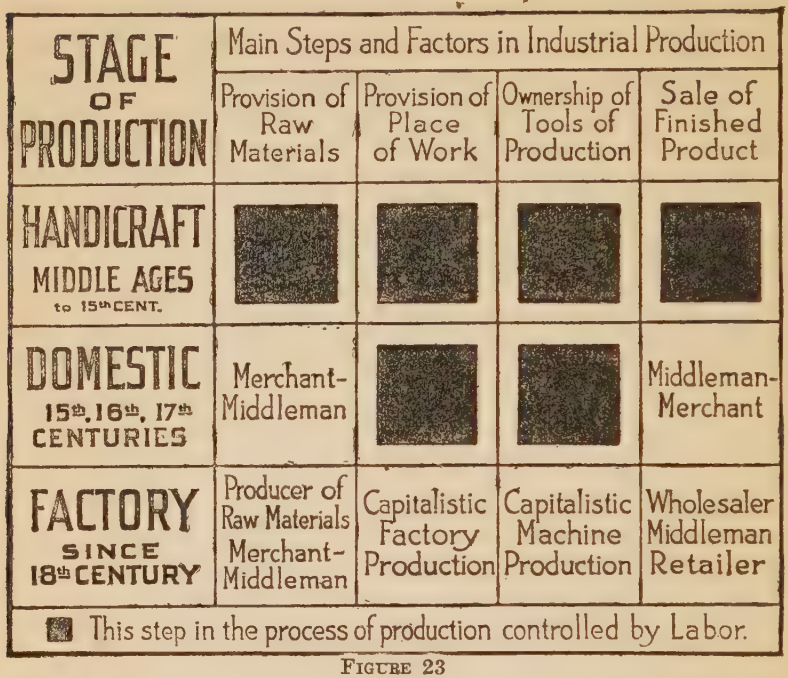


FIGURE 23

Diagram Illustrating How Labor Has Lost Control of One Step after Another in the Evolution of Modern Industry. (The dates are only approximations and merely serve to indicate when the particular type of industry was most prevalent.)

machinery, and factory was in the hands of those outside the class of manual laborers—the employer class—while the workmen sold naught but their labor. It was but natural that, in the absence of the old intimacy of master and man in the processes of manufacture, and in the presence of marked differentiation of function, the interests of the two should grow apart. Under this type of industrial organiza-

tion, it was comparatively easy for the capitalist to appropriate nearly all the wealth produced by the labor of the mill-hands, leaving the employees a scant living share. "Hence," says Gibbins, "it may be said that capital in this case was the result of abstinence, though the abstinence was on the part of the workman and not of his employer. . . ." [28]

It is profitable to dwell for the moment upon the differentiation of classes and the growth of hostile class-interests which came as a consequence of the new organization of industry, for an understanding of these facts helps to explain many of the complex problems of the present day. In place of the old personal tie between employer and employee, we have a simple wage-paying-labor-giving relation, sometimes described as a "cash-nexus." To the large employer of labor, the average employee becomes a mere number. The human relation has disappeared. Large-scale production, the organization of great masses of labor and intricate machinery for enormous output, has apparently increased and enhanced the separation of the productive classes, and made inevitable a feeling of irresponsibility on the part of those in control for the lives of the manual workers. Compare the system of production as its existed when the master craftsman worked in the same room and handled the same tools as his apprentice or employee, with the usual organization of the modern corporation. In the former, the relations of employer and employee were personal and direct; there were no intermediate authorities. In the latter, between the manual laborer and the ultimate owner—the stockholder—there is a whole hierarchy of officials and authorities, represented by the factory superintendent, the general manager, the president of the corporation, the executive committee of the board of directors, and the board of directors itself. How easy it is for responsibility for industrial accident, inadequate wages, or unhealth-

[28] *Op. cit.*, p. 381.

ful working conditions, to be lost somewhere between the beginning and the end of this series! Thus there are structural facts inherent in the factory organization of industry which make for irresponsibility and hostile class-interests.

Unfortunately, the evil effects of these structural traits that promoted class misunderstandings and antagonisms have been increased by a mistaken economic philosophy.

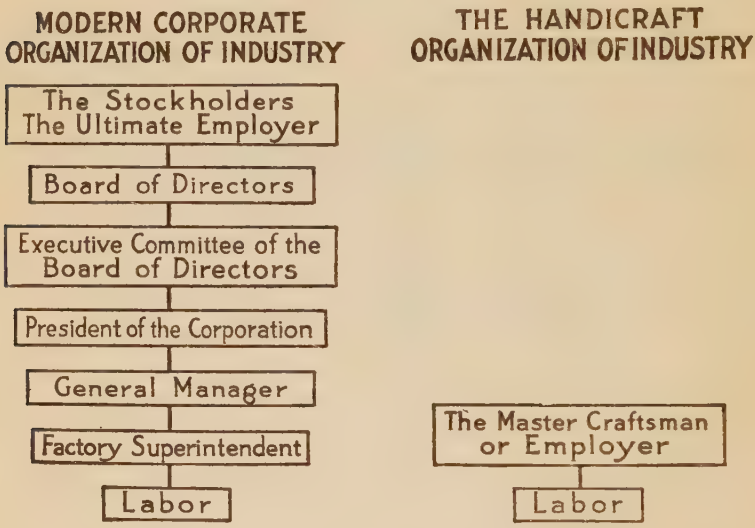


FIGURE 24

A Generalized Comparison of Complex Modern Corporate Organization of Industry with the Simple Handicraft Organization

Policies of commercial and industrial restriction which had their inception in the era of national aggrandizement at the close of the middle ages tended to stifle legitimate economic expansion in the new-world economy, and the reaction against these fetters was first voiced by seventeenth-century English economic writers and by the contemporary French school of the "Physiocrats."[29] But like most social re-

[29] Haney, L. H., *History of Economic Thought*, 1911, pp. 133–190.

vulsions, this change from restrictive policies went too far, and there was an unwise reduction in governmental control over economic activities. The prevailing desire for personal liberty and freedom from outside restraint led people to think of government regulation as an interference with their natural liberty. It was felt that the evils of the existing social order were due, in large measure, to the artificial restraints of man-made laws. If only these legal and customary obstacles could be removed, man would speedily get back to a "state of nature," and, freed from unwise and selfish restrictions, could work out his destiny in accordance with beneficent, natural law. The economic writers Adam Smith, Malthus, Ricardo, and others, attempted to explain why it was that all interference with free competition was interference with natural law, and hence ineffectual and foredoomed to failure.

This social and economic philosophy was therefore quite opposed to the extension or even the continuance of control by the government over matters affecting labor, wages, hours of work, industrial conditions and organization, commerce, agriculture, or any other kinds of economic activity. The idea of the survival of the biologically fit through the agency of a rigorous struggle for existence appears to have had its counterpart in this economic doctrine that free and unhampered competition was the sole guaranty of social and industrial progress. An enlightened self-interest was relied upon to ensure justice to all, and to perfect the structure of social and economic relations in the interest of general human welfare. Consequently we find that there was a gradual cessation of government regulation. The state should let things alone; laissez-faire became the prevailing theory of the functions of government. The growth of this let-alone policy is seen in the parliamentary acts of 1803 and 1809, which modified the old Statute of Apprentices and permitted greater individual freedom; in the subsequent amendment of 1813, which did away with the wage

clauses; and in the eventual repeal of the act in 1814, as against the natural rights of the people. The old restrictions which had forbidden laborers to combine to settle wages and hours were repealed in 1824. The Navigation Acts were abolished in 1849. In 1845, duties on over 400 articles were removed, and four years later protective duties on grain were abandoned. Thus England reversed her traditional policy of regulation, and became the greatest national exponent of "free trade" in modern times.

Combined with the inherent structural tendencies of the modern capitalistic system, this philosophy of laissez-faire, or letting things alone, inevitably worked to the disadvantage of the labor class. The new ideal of free competition justified the most thoughtless and inhuman treatment of employees as much as it opposed government interference to protect them from exploitation. Reduced to a state of dependence, and prevented from exercising control over working conditions to protect themselves, the wage-earners, as a class, fell an easy victim to capitalists unscrupulous or thoughtless enough to apply rigidly the principle of laissez-faire. On the assumption that laborers were guided by self-interest, enjoyed personal freedom in employing themselves, and would avoid unfavorable terms or working conditions, the employer was freed of responsibility for their welfare. Let us see how this worked out.

The weaker classes of the wage-earning population were ruthlessly exploited. Women and children were in great demand as mill-hands. They could readily do the work formerly performed by strong men, for strength was not required to operate the powerful machines driven by water- or steam-power; they were more easily managed than men, being less insistent upon their rights and less pugnacious; finally, they were cheap, for they could be obtained at lower wages than would satisfy a strong adult man. Of 31,632 employees in worsted mills in the year 1839, 18,416 were under eighteen years of age, and 10,192 of the remain-

ing adults were women. This leaves only 3024 adult men among a group of more than 30,000 mill-hands. At a flax-spinning mill near Leeds in 1832, there were 829 employees below eighteen out of a total force of 1200.[30]

One serious aspect of the employment of women and children in such large numbers was that the normal relations of the home were reversed.[31] The man often ceased to be the breadwinner, and the women and children were driven from the home to the factory. Parents came to depend upon the earnings of their children and remained shiftlessly at home, the children going forth to work before daylight and returning home after dark. This horrible state of affairs brought its hideous crop of sickly, stunted, and degenerate persons among those individuals who survived childhood and grew to adult years.

Perhaps the most vicious aspect of the employment of children is seen in the apprentice slavery of workhouse children. The insatiable demand for labor led manufacturers to secure pauper and orphan children from overseers of the poor in the different parishes of England, under the flimsy disguise of pretending to apprentice them to the new employments just introduced. Days were regularly set for inspection of the children, and a systematic traffic was developed according to which the children were conveyed by canal-boats or wagons to the factory; or they were kept in some dark cellar of the factory district until they could be sold to a manufacturer in need of labor. This last transaction was carried on exactly as the slave-dealers of the American markets sold their blacks, the children being examined for height, strength, and bodily capacity. Although nominally apprentices to the master, the unfortunate children were really slaves "who got no wages, and whom it was not worth while even to feed or clothe properly, because they were so cheap, and their places could

[30] Cheney, *op. cit.*, p. 237.

[31] The contemporary aspects of this problem are treated in Chapter X.

be so easily supplied. . . . The hours of their labor were limited only by exhaustion, after many modes of torture had been unavailingly applied to force continued work. Illness was no excuse; no child was accounted ill till it was positively impossible to force him or her to continue to labor, in spite of all the cruelty which the ingenuity of a tormentor could suggest."[32] The horror and pathos of it all is well expressed by Alfred:[33] "In stench, in heated rooms, amid the constant whirling of a thousand wheels, little fingers and little feet were kept in ceaseless action, forced into unnatural activity by blows from the heavy hands and feet of the merciless overlooker, and the infliction of bodily pain by instruments of punishment, invented by the sharpened ingenuity of insatiable selfishness." Many of the children committed suicide, and many children who fell under the influence of the ghastly system were buried secretly at night in some desolate spot, lest people should remark at the number of graves.

It should always be remembered that this unexampled suffering of the weaker industrial classes occurred in enlightened England at the very time when British philanthropists were agitating for the relief of negro slaves in other countries. It is well also to recall in this connection the treatment accorded industrial slaves in Greek and Roman times, for one has a right to expect more humanity in the relations of employers and employees, of master and man, as industrial evolution proceeds.

The children were sent from London and other large cities to work in the factories of the north. "Apprentice houses" were constructed near the factories, and superintendents and matrons provided. During rush periods, the children often worked in twelve-hour shifts. Only the coarsest and cheapest food was provided, and they were frequently forced to eat this while operating the machinery.

[32] Gibbins, *op. cit.*, pp. 388–390; Taylor, *op. cit.*, p. 192.
[33] *History of the Factory Movement*, i, 21, 22.

Sunday, far from being a day of rest, was spent in cleaning machinery. The children worked at mills in remote places where the horrible conditions of their labor would remain unknown to the general public, and were directed by petty masters, or small foremen, so that the absentee mill-owners were frequently ignorant of the real state of affairs.

Factory legislation. One of the first efforts to remedy this evil was the passage of the "The Health and Morals Act to regulate the Labor of Bound Children in Cotton Factories," under the influence of Sir Robert Peel, a large employer of child labor. This act of 1802 set an age limit of nine years, below which children might not be bound out for factory labor; night work was forbidden, and working hours were restricted to twelve a day. Direct health provisions required whitewashed walls and adequate ventilation. In addition, the welfare of the children was still further guarded by insisting upon sufficient clothing and some religious opportunities, as well as instruction in English. But perhaps more effective than this act in ameliorating the abuses of this apprentice system was an industrial change that occurred about the same time. The application of steam-power to textile manufacture caused a transfer to the towns of many of the factories that had previously been located in rural districts where water-power could be obtained. In these towns the children of families there resident could be employed, and the practice of using pauper children was largely discontinued.

But the substitution of these town children for the workhouse apprentices was not a satisfactory solution of the problem, for the evil of child labor still continued. The same early working age, the same long hours and night work, and the same unsanitary factory conditions, persisted. From 1800 to as late as 1840, the results of the evil may be seen in the early deaths of many working children, and in the stunted and distorted forms of those who sur-

vived. Meanwhile the act of 1802 had not been enforced, and the old conditions had largely returned.

Gradually, with painful slowness, the attention of the public became fixed upon the sad lives of these abused and much neglected little waifs, and reform legislation was enacted. It was not until 1830 that a young abolitionist, Richard Oastler, was aroused to the fact that actual slavery existed in England. Although he at once started agitation against this "wage-slavery," he met with many disappointments, for even indisputable facts failed to convince the respectable and self-satisfied classes of the existence of the terrible system in their midst.

As early as 1816, a select committee of the House of Commons had been appointed to collect evidence upon the conditions of child labor. The committee secured evidence of terrible abuse and overwork, yet the greed of capitalists was so great that it was not until 1819 that the second "Factory Act" was passed, and their objections overcome. Between the ages of nine and sixteen, nine being the legal minimum for employment, the hours of labor were restricted to twelve. The actual working hours were from twelve and a half to fourteen a day. The factories began work at 6 A. M. and continued till noon. After a half-hour interval for dinner, sometimes used for eating while attending the machinery, work began again, and continued till 7:30 or 8:30 in the evening. It was a period of unexampled demand for manufactured goods, and every nerve was strained to supply the need and make large profits.

Arguments against the system were based on the feeling that in wealthy and humane England such grinding conditions of work, with their consequent hardships and loss of normal recreation, were unendurable. Moreover, the moral and intellectual education of the children was sacrificed, and they grew up to be immoral and illiterate adults, undesirable citizens. Finally, the system, if persisted in, would bring about the physical degeneration of the indus-

trial population, making diseased and deformed adults. On these grounds the factory acts were urged as necessary reform and preventive legislation. But the established interests advanced arguments against the enactment of factory laws on the ground that these acts constituted unjust and unnecessary interference with the freedom of manufacturers, who, as a class, were responsible for the prosperity of the nation and the employment of the laboring classes. Again, it was pointed out that the factory system was being introduced into France, Belgium, and the United States, where no legal restrictions on work conditions prevailed, and that the inevitable result would be that English manufacturers, hampered by the factory acts, would lose out in the world competition, to the great embarrassment of the nation. Lastly, the policy of government regulation had been tried for hundreds of years and abandoned as a failure, because any artificial interference with the natural laws which controlled wages, employment, and profits, was inherently injurious.

Strangely enough, the economists were defeated on ground which seemed peculiarly to belong to them, for the philanthropists won their fight for the protection of women and children in the factories and mines of England. In 1831 an act forbade night work in factories for persons between nine and twenty-one years of age, and fixed the working day at twelve hours, with a nine-hour day on Saturday for all under eighteen. Step by step the long struggle against factory slavery was won. The Act of 1833 extended the application of restrictive legislation to woolen and other operatives, prohibiting night work to persons under eighteen, fixing the weekly hours of labor at forty-eight for children from nine to thirteen, and at sixty-eight for young persons from thirteen to eighteen. Factory inspectors were to be appointed, and there was to be provision for education. The best evidence of the diminished employment of children caused by these acts is seen in the

great increase of improved machines and mechanical labor-saving devices. The "Children's Half-time Act" was passed in 1844. This law provided protective devices and safety rules for the operation of dangerous machinery, and restricted the labor of children to half a day, the other half to be spent in attendance at school. In addition, previous principles of factory legislation were extended to cover the work of all women, under the rules originally laid down for young persons. Three years later, in 1847, the famous "Ten-hour Act" was passed. By this law the labor of women and young persons was reduced to ten hours a day, and the legal day set at between 5:30 A. M. and 8:30 P. M. It is estimated that the act applied to 360,000 persons. This meant that "at least three-fourths of all persons employed in textile industries had their hours and some other conditions of labor directly regulated by law." [34]

Other acts followed, and many much needed extensions of their provisions have been made, as well as legislative enactments on other matters affecting the welfare of the laboring classes. The modern tendency has therefore been in the direction of greater government regulation, and, in opposition to the teachings of the superficial philosophy of laissez-faire, there is a trend towards state paternalism.

Modern government regulation, however, does not stop with the protection of labor, but extends to the safeguarding of the consumer and investor. This expansion of the activities of the state was made necessary by the spread of the corporate form of organization in large-scale production. The introduction of the machine and of the factory system of manufacture called for the employment of aggregates of capital far beyond the means of the old-fashioned partnership, and the corporate form of enterprise was adopted to meet the need. Although the commercial corporation existed long before the industrial revolution, and the joint-stock principle had been applied

[34] Cheney, *op. cit.*, p. 256.

in the sixteenth century, it was not until industrial capital, as distinct from commercial capital, assumed dominant importance in the nineteenth century, that an immense expansion of corporate enterprise took place.

Possessing the advantages of joint-stock ownership, limited liability, and perpetual life, the corporation supplied the necessary machinery for the successful capitalistic organization of production on a large scale. In proportion to his investment, every stockholder has a voice in the enterprise, and the number of such investors can be increased indefinitely because of the device of corporate security, thus rendering possible vast accumulations and wide dissemination of capital. Although the shareholders die and disappear, the shares remain, and the corporation enjoys a continuity of existence. Thus the corporation possesses advantages of permanence and stability, and provides for scope in planning ahead that never fails to attract high ability.

But the corporation has shortcomings which require correction, if the consumer is to be protected and the investor safeguarded from its predatory tendencies. From the early form of agreement to fix prices, modern corporate enterprise has passed through various stages of agreements to divide the field between competitors, pool arrangements by which output rather than price or field is restricted by agreement, selling bureau agreements to fix prices and output, and to manage selling, ordering, and distributing, the "trust" stage, in which constituent enterprises turned over their business to a central board of trustees, and the stage of the holding corporation. These developments of business units into larger and larger combinations in possession of greater and greater power have made it necessary for the government of the modern industrial nation to regulate corporate enterprise in the interest of the credulous investor by enforcing responsibility and requiring publicity, and to interfere with monopoly prices in the interest

of the consumer by supplementing competitive checks with legislative restrictions. So it has happened that, in contemporary times, the sphere of government regulation has widened to include activities which seek to protect the consumer and investor, as well as to safeguard labor.

Some wider aspects of the industrial revolution. Gras [35] has developed a theory of the rise of the metropolitan community as the fifth stage of a cultural evolution which began with a simple collectional economy, developed through a cultural nomadic economy, attained a settled village economy, and in a town economy laid the basis for the present metropolitan economy. He claims that "When the town economy weakened and finally disappeared its dual function was found to be divided, the rôle of economic organizer going to the economic metropolis and the function of regulation to the political body, in the classical period, the empire, and in modern times, the national state." [36]

This new unit, the metropolitan community, is made up internally of *a great commercial city* as a nucleus and a large surrounding area as *hinterland*. We have seen how the great cities of to-day are largely the aftermath of a social and economic reorganization of society occasioned by the invention and introduction of power machinery in manufacturing processes. We shall see in the next section of this chapter why the new communication, a revolution occasioned by the introduction of machinery into the fields of transportation and transmission of intelligence, has made possible the domination of a large hinterland by a centrally located commercial city. But before passing on to this subject it is important to consider briefly some of the aspects of the metropolitan community.

Gras points out that no really metropolitan community can arise unless situated at a respectful distance from its

[35] *An Introduction to Economic History*, New York, 1922.

[36] "The Rise of the Metropolitan Community," *Amer. Journal of Sociology*, vol. 32, no. 1, pt. 2, July, 1926, pp. 155–163.

competing neighbors. Thus Providence is overshadowed by Boston, Philadelphia by New York, and so on, whereas New England is the hinterland of Boston, and the Northwest is the hinterland of the Twin Cities, St. Paul and Minneapolis. In the metropolitan center are found the headquarters of the railroads, steamship lines, express companies, and the network of transportation and communication. Here also are found the great financial institutions of banks, trust companies, and insurance companies. Warehouses, cold-storage plants, and elevators are concentrated at this center. Through the agencies of these institutions the great city spreads out its network of influence and control. At first this whole movement was unplanned and unconscious. Now the drift is recognized and trends in marketing and other economic functions are being studied and controlled.

These wider aspects of cultural change which may be traced back to the industrial revolution are for the most part accepted without explanation, because they are so much a part of the social environment into which we are born. And yet we will understand better some of the puzzling problems of to-day if we will but recognize that the present order of things did not always exist—that as a matter of fact our present social and economic environment is comparatively new and still in the making. Thus far we have stressed the concentrating trends in population grouping in cities and in metropolitan communities. Our survey of the phenomenon would not be complete were we to omit consideration of the vertical as well as the horizontal spread of population. What we refer to is the growth of the "sky-scraper" as both the culmination and the symbol of contemporary cultural change.

The sky-scraper is unique in contemporary industrial civilization. Ancient cathedrals were high buildings but their ponderous walls were designed merely to support the roof and keep out the weather. There were few buildings ris-

ing above five stories even as recently as seventy-five years ago.

Compared with the massive walls of ancient buildings, medieval castles and cathedrals, our slender sky-scrapers seem fragile and delicate of structure. The use of steel-reinforced concrete, the availability of glass, the perfection of electrical lighting devices, modern plumbing and sewage disposal, high water pressure, and the invention of the elevator constitute a complex of culture traits responsible for the sky-scraper.

Before the advent of these culture elements the sky-scraper was impossible. Tall buildings were economically inefficient before the days of these inventions. Space decreased in desirability and rental value fell floor by floor as one climbed the stairways above the first two floors. Wilhelm [37] has pointed out that the law of diminishing returns began to operate once the second or third floor had been passed. Seventy-five years ago land was cheap and buildings were small. Travel was horizontal. The folkways of vertical travel by elevator had not been developed. There was opposition to tall buildings. The first safe elevator (there had been experimentation with hoists) was invented in the year 1852 by Elisha Graves Otis. It was a hoist, but with a safety device which acted as a brake and came into operation automatically in time of emergency only when activated by difference in potential.

Thus it has happened that at about the same time that steam railway transportation, steamboats, the electric trolley, and the cheap automobile all combined to converge the pressure of population on more and more limited areas and produced the "Loop" or central business zone [38] of great cities, the sky-scraper came as a fortunate invention in material culture to supplement and offset the earlier housing limitations. The sky-scraper has solved the apparently

[37] "Things I Didn't Know About Elevators," *Harpers*, 1927.
[38] Park, R. E., and Burgess, E. W., *The City*, Chicago, 1925, ch. 2.

hopeless problem of combining housing accommodations in a sharply restricted area with an ever-increasing use of this area by a growing population. It has done this by supplementing the horizontal transportation of the railroad, steamboat, trolley, and automobile, with vertical transportation by elevator. The challenge of horizontal transportation by multiple machines has been met by vertical transportation in a single machine, the elevator.

Recently there has occurred what may prove to be a fundamental change in the trend of material culture. Hitherto the introduction of power machinery has tended to promote the concentration of population in great centers. Within the last few years engineers and capitalists have discovered the possibilities of "Giant Power" or "Superpower." Giant Power is power derived from electric dynomos turned by water-power hitherto unused or inefficiently used, or generated by dynamos driven by steam-engines at the mine head, and sent by long distance transmission from these remote places to the great centers of population.[39] Much has been claimed for the social and economic effects of this quiet revolution that is taking place in the source of power for automatic machinery of manufacture, transportation, and communication. Some predict a second industrial revolution which will effect a redistribution of population by checking the cityward trend and make small town and country life comfortable and efficient because of unlimited supplies of cheap electrical energy. Already the Canadian province of Ontario has experienced a revival of rural and small town life because of the plentiful supply of cheap electrical energy generated at Niagara Falls and transmitted throughout the province. In the Pacific coast cities of the United States and in European cities near the Alps, hydro-electric power is transmitted long distances

[39] "Giant Power," *The Survey Graphic*, vol. 50, no. 11, March 1, 1924; also vol. 57, no. 7, Jan. 1, 1927; see also "Giant Power," *Annals*, vol. 118, March, 1925.

and provides efficient power to drive the machinery of manufacture, transportation, and communication.

It is too early to tell whether Giant Power will make substantial changes in our contemporary culture. Certainly the change will be gradual, for the vested interests of industrial capitalism have been quick to see the possibilities and have quietly extended their control of water-power sites and coal mines, so that there will be considerable resistance to the lowered price for power which the new economy seems to promise and justify. If electrical power finally becomes cheap and is widely distributed over the area of industrial civilization, we are more likely to witness a redistribution of population or at least a check on the cityward trend, than to find any substantial change in our material culture. Cheaper power will promote the wider use and application of machinery, not check its applications. Power machinery has come to stay. Mechanical inventions seem to have passed their apex[40] and it is doubtful whether we shall see any new fundamental inventions in the mechanical field. New inventions of a fundamental sort are, however, urgently needed in non-material culture, in social, economic, industrial, and political organization. It is possible that the coming centuries will witness the application of human ingenuity to the solution of social problems, now that mechanical devices have reached a state of perfection. At any rate this is a problem with which we shall deal in later chapters,[41] since it is a large subject and requires analysis in terms of concrete social inventions.

One other field in which power machinery has effected great changes requires consideration. This leads us to the subject of agriculture and machinery.

Agricultural machinery. Although the history of English agriculture gives us a condensed picture of the agricultural revolution in so far as it has involved concentration of own-

[40] Mendelsohn, S., *Saturated Civilization*, New York, 1926, ch. 10.
[41] Chapters XI and XII.

ership, enclosure of lands, and the creation of a rural wage-earning class, it is to America that we must turn for a view of the effects of agricultural machinery upon rural life. The vast fertile plains of the central and western parts of the United States afforded an opportunity for the application of machinery to agriculture on a scale undreamed of by English cultivators.

It was not until 1837 that the first steel plow was made. Then came the gang-plow, drawn by five horses. This invention made it possible for a man to plow five acres a day, and it seemed that the acme of progress had been attained. But at the present time a 110 horse-power machine plows a strip thirty feet wide at a rate of three or four miles an hour, and does all the harrowing at the same time. Under favorable conditions, it is possible to plant from ten to twelve acres an hour, thus performing the work ordinarily done by forty or fifty teams and as many men.[42]

The old-fashioned harrow has undergone a remarkable evolution. To-day we have the peg-tooth, spring-tooth, disk, spader, and pulverizer harrows, drawn by horses in the wake of the plow, and capable of covering a four to twenty-foot swath. One of the later inventions is a harrowing machine with a 100-foot reach, which harrows thirty acres an hour.[43]

The mowing-machine was patented in 1831, and reapers were made practicable by 1840. The first steam-thresher appeared in 1860, and five years later 250,000 machines were in use. In 1880, the United States had become the greatest wheat exporter of the world, chiefly because wheat-threshing and twine-binding were done by machinery. The cultivation of corn has been improved by the check-rower, the lister, the weeder, the riding-cultivator, and other machines.[44] The universal problem of motive power has finally

[42] "Farm Machinery as a Labor Saver," *Ency. of Amer. Agri.*, vol. I, pp. 208–209.

[43] Fiske, G. W., *The Challenge of the Country*, 1912, p. 78.

[44] *Ibid.*, pp. 75–77.

been solved by the invention of the automobile traction-motor.

This series of brilliant inventions has had the effect of tremendously increasing agricultural output, and at the same time diminishing the need for manual labor. By modern machine-methods, the sowing of small grains is accomplished in about one-fifth the time formerly required for hand-sowing. The modern harvester displaces seven men, and the modern threshing-machine has displaced from fourteen to twenty-nine farm laborers. It is estimated that the average increase in labor efficiency during the past two generations, because of the application of machinery to the nine more important crops of the United States, has been 500 per cent.

The financial results of these improvements in farm machinery have been summarized by an authority as follows: "In 1830 it required over three hours of labor to raise a bushel of wheat; in 1896 it required but ten minutes—a saving of over fourteen cents a bushel; in 1850 it required four and one-half hours of labor to raise a bushel of corn; in 1894 it required but forty-one minutes; in 1860 one ton of hay represented thirty-five and one-half hours of labor; in 1894 this labor was reduced to eleven and one-half hours." [45]

Farm machinery has thus enormously increased the productivity of the land and of the farmer. It has caused a rapid increase in financial returns from crops, because the cost of production has fallen with the introduction and substitution of machine-power for manual labor. But it has meant more than the displacement of farm laborers; it has materially reduced the hard, grinding, back-breaking labor which produced such meager returns that the farm boy

[45] Gillette, J. M., *Constructive Rural Sociology*, 1916 ed., p. 150. An excellent summary of the effects of agricultural machinery and the automobile on farming operations is given by Peck in *The Quarterly Journal of Economics*, vol. 41, May, 1927, pp. 534–544.

often grew into the hopeless and prematurely aged man, or gave up the struggle and ignominiously retired to the city. Before the conquering advance of agricultural machinery, the drudgery of farm life is gradually retreating, and now the rural population may confidently look forward to a time when the great majority of farmers will be relieved of the deadening manual routine to a degree that will permit released energies to be turned towards self-development and education.

2. The Revolution in Communication

The industrial revolution perfected the mechanism of manufacturing production and made possible the enormous output of goods which flows through the markets of to-day. But the mechanism for distributing the vast wealth so created is still antiquated and far from being adapted to requirements of the present social order. What we now need is a revolution in distribution, in order that the inequalities of income may be reduced to such an extent that the masses of the working people may obtain a larger share of the annual production of wealth.

Popular government seems to be the chief hope of those who desire to see this change effected. But the poverty and the destitution, the class separation and antagonisms, which came as the inevitable result of the rapid progress of the industrial revolution, have threatened the very basis of democracy. The gap between the capitalist and the working classes prevents the latter from communicating their needs and desires in a way which can secure the essential changes.

Fortunately for the future of popular government as an instrument for the amelioration of social evils, a revolution has come to pass in the means of communication, a transformation so thoroughgoing and formidable that it is quite comparable in importance and meaning with the great revolutions in agriculture and manufacturing industry just

described. The revolution in communication completes the trio of great peaceful revolutions that have transformed modern society and marked off contemporary times from all the past history of mankind. The new communication furnishes the mechanism through which the abuses of the modern social order may be corrected, because it injects new life into popular government by supplying a medium for the diffusion in vivid terms of truthful information about social relations. With this highly perfected instrument of communication at its disposal, democracy should be able to devise a means of social control of wealth distribution that will more and more guarantee an equable sharing of the annual production of wealth. It is not the purpose of this book to consider the development and perfecting of a new order of distribution. All that will here be attempted is a demonstration of the great significance of the new communication for the expression of the popular will and the strengthening of democracy.

Considering the means of transportation and communication of two centuries ago, men of the eighteenth century were about as much circumscribed in thought and limited in action by material and physical barriers as were men of antiquity. Vast oceans, arid stretches of desert region, and lofty and impassable mountain ranges, set definite limits upon the freedom of movement of all but a negligible few. The customs and prejudices of each little locality enslaved the intelligence of the masses, and encouraged a narrow and provincial outlook upon life. Travel was the luxury of a small minority, and communication was largely direct or by word of mouth. Then came the burst of scientific discovery and mechanical invention applied to transportation and communication which began in the late eighteenth century, increased in volume and importance during the nineteenth and twentieth centuries, until, at the beginning of the second decade of the twentieth century, it seems as

though the mechanism of communication has been largely perfected.

In the widest sense of the word, transportation is communication, for it involves the transfer of material or physical objects which themselves may be the agents or means of communication.[46] Messages, mails, letters, persons, and physical bodies are conveyed from place to place by the modern transportation system. It is, therefore, as a means or an agent of communication that transportation will be considered in this chapter.

The great inventions in communication. The modern transportation system began with the application of steam-power to motor vehicles in the early part of the nineteenth century. The earliest railway vehicle in the United States was used at Boston in 1807. George Stephenson built his first engine and operated it on the Killingsworth railroad in 1814, and traffic began on the Stockton and Darlington railroad in 1825. The first practicable electric railway was built in 1884, when an overhead trolley-line began operation in Kansas City.

It was not long before steam-power was applied to water transportation. Robert Fulton's sidewheel steamer *Clermont* began to navigate in 1807.[47] As early as 1801, Fulton had constructed and operated, with more or less success, a model submarine. But it was not until the twentieth century that under-water transportation attained any degree of practical value, even for military and naval purposes. On July 9, 1916, the great commercial submarine *Deutschland* arrived at Baltimore, having eluded the Allied blockade of German ports and crossed the Atlantic ocean by means of her own power and fuel.

[46] Cooley, C. H., "The Theory of Transportation," *Pub. Amer. Economic Association*, vol. IX (1894), pp. 262–294.

[47] Gilfillan, S. C., in "Who Invented It?" *Scientific Monthly*, vol. 25, Dec. 1927, pp. 529–534, places the date of the first steamboat as 1738 and confirms Ogburn's theory of the multiple invention of culture traits.

Although transportation by automobile is of recent development, a steam-carriage was proposed by Newton in 1680, and a model steam-carriage was constructed by Nathan Read in 1790. In 1802, a steam-carriage was driven ninety miles, and during the period from 1824 to 1836 steam-carriages were constructed in numbers. The period of modern development of the automobile began in 1894. It is true that a gas-engine was constructed in 1886, but the successful internal combustion engine was not constructed until George B. Selden of Rochester, New York, patented his device in 1895.

Early efforts to conquer the air began in 1783, when Pilâtre de Rozier and Marquis d'Arlandes rose 3000 feet and traveled nearly two miles by balloon. There were fifty-two balloon ascents in 1784. The first notable distance record was made in 1859 by two American aëronauts who traveled 1150 miles at a rate of about a mile a minute. Colonel Renard traveled twenty-three miles in a dirigible balloon driven by a motor screw in the year 1884. By 1910 Count Zeppelin opened the first regular airship passenger-service with the great dirigible *Deutschland*. In 1913, Zeppelins carried a total of 12,382 passengers for trips as long as five hours at a time. Following the earlier experiments of Langley and Maxim, Orville and Wilbur Wright of Dayton, Ohio, were the first to solve the problem of aviation. They flew twenty-four and one-half miles with a heavier-than-air machine in 1906. During the last decade, the number of different aëroplane models has increased, until to-day there are almost as many different aëroplane as automobile models and the conquest of the air seems practically completed. Thus, in the course of about one century, man has perfected the mechanism of transportation in three elements—on the earth, on and under the water, and through the air.[48]

[48] See "Aviation," vol. 131, May, 1927; and "The Automobile—Its Province and Problems," vol. 116, Nov., 1924, both in *The Annals of the American*

Even more startling than the rapid progress of invention in transportation has been the discovery and invention of new methods of direct communication. Photography appears to have had its beginning with the investigations of K. W. Scheele in 1777 as to the darkening action of sunlight on silver chloride. The experiment was repeated by J. Senebier in 1782. The first real photograph was produced in 1802 by an Englishman, Thomas Wedgwood. The daguerreotype of L. J. M. Daguerre and Niepce was perfected in 1839. Dry plates were invented in 1862. The first "kodak," using films, was invented in 1888. Frederick E. Ives of Philadelphia invented the three-color process of color-photography, based upon the combination of three primary colors, red, yellow, and blue, in the year 1878, and further perfected the process in 1885.[49] Lithography, begun in 1798, became a regularly established trade at Munich by 1806.

The motion-picture was invented by Dr. Coleman Sellers of Philadelphia, who patented the "kinematoscope" in 1861. The first motion-picture exhibit was given by Henry Heyl of Philadelphia before an audience of 1500 persons in 1870. The standardization of the motion-picture film and apparatus is now complete, and the Smith-Urban kinema-color process, and the Gaumont three-color process have been introduced. New developments have appeared in the form of a talking-motion-picture, known as the "vitaphone" (invented by Edison in 1913 under the name "Kenetophone"), in which there is a synchronization of screen pictures and the spoken word. Since the inventions of M. Gaumont of Paris, in 1902 and 1912, motion-pictures in natural colors have been possible in connection with the kenetophone.[50]

Academy of Political and Social Science. Philadelphia; also "Facts and Figures of the Automobile Industry," *National Automobile Chamber of Commerce,* New York, 1927.

[49] "The Invention and Development of Photography," in *The Scientific American Supplement,* vol. 112, pp. 530, 560–566.

[50] *Ibid.,* vol. 108, p. 539.

One of the most extraordinary, as well as useful, inventions of new communication is the phonograph. Thomas Young, in 1807, described a method of recording the vibrations of a tuning-fork on the surface of a drum. The "phonautograph" of Leon Scott, used in 1857 to record the vibration of a membrane, seems to have been the real precursor of the phonograph. But it was Thomas A. Edison who first accomplished the reproduction of vibrations of sounds on moving surfaces. Edison patented his device in 1877. Other sound-recording machines soon followed. Alexander Graham Bell and S. Tanier patented the graphophone in 1885, while Emile Berliner patented the gramophone in 1887.

The first practical use of the principles of Volta's battery and Sturgeon's electro-magnet was made by Joseph Henry of Washington, D. C., in 1831. Samuel F. B. Morse invented the commercially practicable system of telegraphy in 1837.[51] After preliminary experimental work between 1845 and 1888, the first practical application of electric-wave wireless-telegraphy was made by Guglielmo Marconi in 1896. Within the last six years the radio set has become a standard piece of equipment in many homes. In 1851, the first successful submarine cable was laid, and in 1857 and 1865 transatlantic cables were put down. The most recent developments in the field of telegraphy are facsimile-telegraphy and phototelegraphy. Alexander Bain invented a copying machine in 1843, and transmitted handwriting by telegraphy in 1847. From 1898 to 1909 telautography was used in connection with the wireless system. Photographic likenesses are now commonly transmitted by telegraph to newspapers.

Alexander Graham Bell established the first commercially practicable telephone system during the period 1875

[51] But Germans credit the telegraph to Sömmering, of Munich, in 1809, and in Switzerland there was an electric telegraph in 1774, and one was proposed in Scotland in 1753; see Gilfillan, *op. cit.*

to 1877, having patented his invention in 1875. Bell's work was the outgrowth of experimentation which had begun as early as 1831. The "television" attachment has recently been perfected so that a speaker and an auditor may see each other; and images have been transmitted across the Atlantic by radio.

Somewhat less spectacular and startling than these remarkable single inventions and their combinations, has been the appearance and wide use of the cheap newspaper (since the 1830's), low-priced magazines, and inexpensive books. Yet these changes, as well as improvements introduced by the linotype machine and the typewriter in the last quarter of the nineteenth century, have had a profound influence in creating the new communication.

The expressiveness of the new communication. If we attempt to analyze and describe the characteristics of the new communication, four factors may be distinguished which, according to Professor Cooley,[52] have mainly contributed to its efficiency. These aspects of the new mechanism of communication are: expressiveness, or the range of ideas and feelings it is competent to carry; permanence of record, or the overcoming of time; swiftness, or the overcoming of space; and diffusion, or its access to all classes of men. This classification is about as significant and comprehensive as any, and we may now examine the sociological importance of the new communication in the light of it.

Through the medium of the photograph in its half-tone and color processes, by means of the motion-picture and the phonograph, and their synchronization in the vitaphone, through the channel of the telephone and the large-scale printing of penny newspapers, cheap magazines, and inexpensive books, the range of ideas and feelings which the modern mechanism of communication is competent to express has been extended to cover all aspects of modern so-

[52] *Social Organization*, 1912, p. 80.

cial life. These inventions in communication make it possible for society to be more and more organized on a basis of the higher faculties of intelligence and sympathy, and less and less dependent on the crude unifying influences of authority, caste, and routine.

The postal system furnishes the material means by which personal communications, newspapers, and magazines may be sent to the uttermost corners of the earth, and intelligence about world events radiates from metropolitan centers to remote rural localities.

The inexpensive American newspaper provides a European news service of remarkable fullness, a lavish amount of information about local, state, and national politics, educational news of schools, colleges, and societies, religious and church news, news of women's clubs, articles and news about music, drama, new books, social service, and innumerable agencies of civic activity. Then there is considerable space devoted to such sports as baseball, football, racing, tennis, hockey, golf, skating, and aquatics. The commercial section embraces information about all markets and trades, and devotes much space to real estate. The Sunday supplements publish excellent photographic reproductions illustrating specially significant or interesting occurrences at home and abroad. The "funny strip" of the daily, and the comic page of the Sunday supplement, have apparently become one of the established institutions of the American press.

Magazines are of all sorts. They may be classified on the basis of the human activity or field of thought which they endeavor to express. There are a multitude of scientific, religious, artistic, trade, business, agricultural, and manufacturing periodicals, in addition to the few high-grade literary publications, and the many cheap and frothy magazines.

Photography has enormously increased our capacity of expression. Great paintings, beautiful architecture, natural

wonders of forest, stream, mountain, plain, and sea, as well as the varied aspects of the human face, are faithfully reproduced in soft half-tones and striking contrasts. The unsanitary tenement with its rickety stairs, dark halls, filthy plumbing, and cracked walls is just as graphically shown as the marble stairways and rich hangings of the palace. Public sympathy is aroused in support of reform legislation to remedy bad housing, tuberculosis, "sweating," child labor, and uncompensated industrial accidents by vivid photographic representations of the trail of misery and squalor that follows these evil conditions. Stereoscopic views of foreign countries realistically portray the charm of their natural scenery and architecture. In art books, in popular magazines, and on post-cards, views of all sorts are printed in natural colors.

Moving-pictures seem real because they express the motion and action that earlier photography failed to catch. The rushing torrent, the magnificent waterfall, the splashing surf, the even flight of a bird, the speed of an express-train, the course of a sailing vessel, the surging of a crowd, the rhythmical march of line upon line of troops, and the facial expressions of mirth, laughter, sorrow, weeping, fear, and joy—all are reproduced with impressive fidelity.

The motion-picture does more than represent external and objective things. It is capable of expressing the subtler mental processes far more forcibly than the ordinary photograph. Emotion, feeling, and imagination may be interpreted upon the screen by a fleeting glimpse of past events aroused in memory. The phantom of a dead loved one appears to stay the hand of the murderer. Thus by a clever deception of photography the audience is enabled to visualize images that pass through the hero's mind in quick succession and explain his hidden motives, moods, and action better than any words or facial expression alone. Professor Münsterberg has said: "It is the only visual art in which the whole richness of our inner life, our percep-

tions, our memory, and our imagination, our expectation, and our attention can be made living in the outer expressions themselves."[53] Indeed, so insinuating are the suggestions of motion-picture plays that it has seemed necessary to exercise by means of a voluntary board of censorship a degree of social control over the type of "reel" exhibited to the public.

The extraordinary expression and usefulness of the motion-picture has found application in the educational field. Historical events, manufacturing processes, biological changes, scientific and laboratory methods, all are presented effectively upon the screen. Diagnosis of nervous diseases characterized by quick movements, tremors, peculiar gaits, convulsions, and spasms, is assisted by use of motion-pictures. They are also used in the study of diseases of the eye, whooping-cough, and meningitis, and in presenting the movement and growth of bacilli, the tremors of epilepsy, and in demonstrating proper technique in obstetrical surgery. X-ray motion pictures show the stomach and muscles performing their functions, and the palpitation of the heart. Slow-motion pictures are used for analysis and can be hastened to observe the total effect in truer perspective. Quick movements, such as the flight of an insect, the course of a projectile and its effect on armor plate, and the falling of a body, may be studied by retarding the speed of the films. On the other hand it is possible to produce in three minutes a ten-day period of growth of a horse-chestnut. These are but a few of the illustrations that could be given. The educational uses of motion-pictures are now so familiar that further examples are unnecessary.

The new communication has, however, passed beyond the stage of mute appeal by photograph and even motion-

[53] *The Cosmopolitan Magazine*, December, 1915; for a detailed discussion see "The Motion Picture in Its Economic and Social Aspects," *The Annals of American Academy of Political and Social Science*, vol. 128, Nov. 1926.

picture; it has made notable conquests in the realm of sound. By telephone and radio the finest graduations of tone and the subtler qualities of the human voice are faithfully transmitted and reproduced over great distances, so that a person's state of feeling, whether of joy, sorrow, anger, pleasure, depression, or exaltation may be correctly expressed. The music of the human voice and of full orchestral instruments may be recorded upon a wax disk, and reproduced with great fidelity to details. Thus the whole gamut of human passion, feeling, emotion, and sentiment is made increasingly communicable and recordable. George Bernard Shaw says he will not be surprised if the cinematograph and the phonograph turn out to be the most revolutionary inventions in communication since the discovery of writing and printing.

Swiftness in overcoming space. James Bryce has expressed the opinion that the Great War might have been averted had it not been for the speed with which the cable, telegraph, and telephone flashed news between the capitals of Europe during those dramatic closing days of July, 1914. If news had spread less rapidly, perhaps the slower processes of diplomacy might have been given opportunity to work—at least, the statesmen of Europe would have been saved the necessity of making tremendously important decisions at short notice.

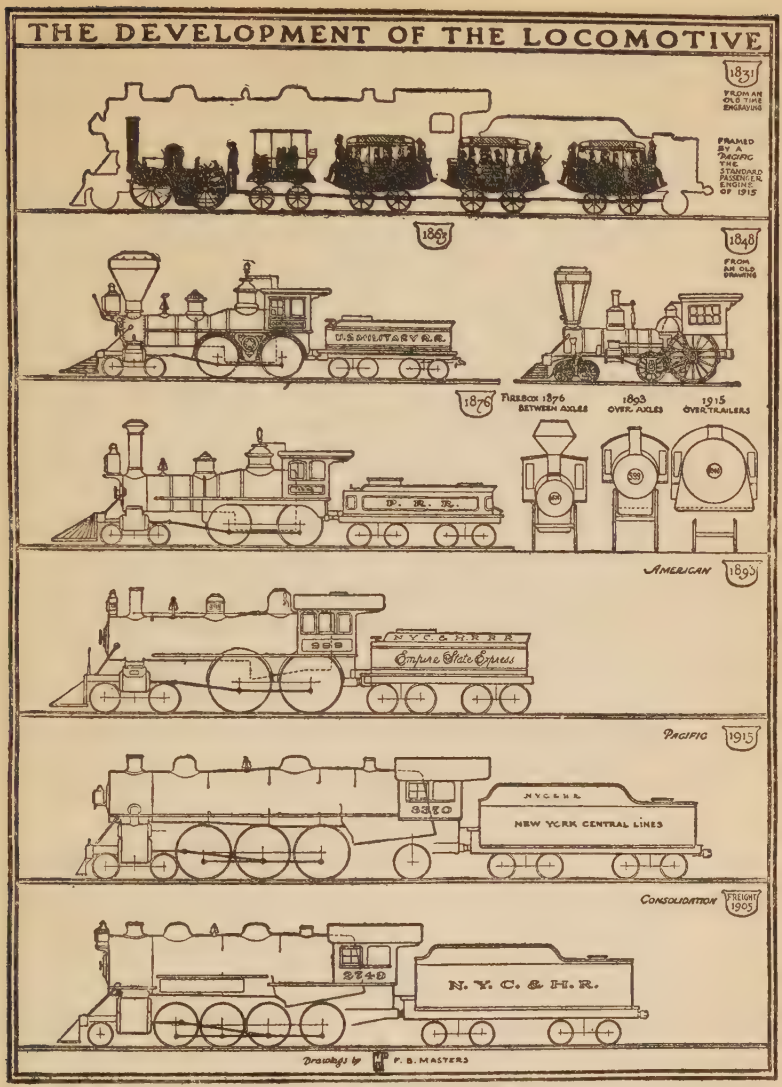
It takes but an instant to transmit the human voice by telephone or radio to a far distant point. By telegraph, news radiates from central places, and flashes across oceans and over continents in an incredibly short space of time. On Oct. 4, 1915, Mr. Theodore N. Vail in New York picked up his desk-telephone and conversed easily with San Francisco. Thus the human voice, hardly audible at a hundred yards, was carried more than 3,000 miles, and 2,500 miles of this distance was by wireless. The same conversation was overheard by a wireless operator in Hawaii, 4,800 miles distant. Suitable receiving stations at Petrograd, Tim-

buktu, Rio de Janeiro, or the North Pole could have heard the same conversation. In 1927 radio-telephone conversations across the Atlantic were frequent. The fast express-train carries the morning newspaper, printed in the metropolis, to towns and villages that lie two hundred miles distant. The Atlantic ocean may be crossed in less than five days. The automobile and the aëroplane complete man's emancipation from the ancient disadvantage of remote location and inaccessibility.

The diffusion of intelligence. The aggregate railroad mileage of the United States in 1925 was 249,398 miles. Some idea of the diffusion of intelligence made possible by the railroad systems of this country may be gained from the fact that the total passenger movement in 1925 involved the transportation of 901,963,145 persons. Mail service and mail movement constitute one of the most important aspects of communication and interaction promoted by railroads. The amount of printed matter in the form of personal communications transmitted by rail and other mail service is incalculable, but it is possible to gain some idea of the diffusion of information by means of the daily newspaper circulated in urban regions and radiated into the surrounding country. In the city of New York alone, the average daily circulation of newspapers was 5,574,216 in 1925.[54] From 1850 to 1925, the per capita circulation of all periodicals increased from 18 to 144, which means that the average American family now receives eight times as many periodicals as in 1850. It is estimated that for non-periodical literature, some 433,211,253 books and pamphlets were published in the United States in 1925.

This new communication has wrought its greatest benefits in rural communities. Isolation from the vast currents of men and ideas that move along the more accessible river-valleys and over the fertile alluvial plains where great cities have arisen, was the great curse of the country. The

[54] *World Almanac* for 1928.



By F. B. Masters.

FIGURE 25

The Development of the Locomotive

influences that have revolutionized the life of country folk are found within the limits of the new communication.

About thirty million country people received mail daily over the forty-three thousand odd rural mail routes during 1920. The distribution of metropolitan dailies brings to the remote village news of the throbbing life of the city, and serves as a constant stimulus to thought and action. The farmer and his boys are now able to discuss intelligently the great interests of humanity. This broadens and enriches their lives to an incalculable degree, and prevents mental stagnation. Fiske [55] mentions one rural route upon which the number of daily newspapers delivered increased in three years from 13 to 113. The number of rural free delivery carriers in 1915 was 43,710, and the daily mileage, 1,073,099.

Although the steam railroad has opened up whole sections for settlement, and served as an important artery of communication for the continuous influx of fresh thought and world standards, it is the interurban trolley that has, in recent years, contributed more to the enlargement of rural life and possibilities. For the electric railway does what the steam railroad cannot do: it provides frequent service and stops, at a small fare. Its passenger-rates vary from three quarters to one and one-half cents a mile, compared with two to three cents on steam roads. Cheap construction, low expense for power, low maintenance, and equipment costs, make these rates possible. The frequent stops and small charge for fare facilitate visiting and travel. Says Dr. Roads: "No king one hundred years ago could have had a coach, warmed in winter, lighted to read at night, running smoothly with scarcely a jolt, and more swiftly than the fastest horses." [56]

The final step in transportation which has emancipated rural life from its agelong inaccessibility and stagnation

[55] *The Challenge of the Country*, 1912.
[56] *Rural Christendom*, p. 84.

is the inexpensive automobile. Its low running-cost makes the automobile as much of a necessity for the farmer as agricultural machinery. It annihilates distance, makes isolation a myth, and as a means of communication outstrips everything but the telephone. A considerable proportion of the twenty-two million automobiles in the United States in 1927 were owned by farmers.

With the coming of the rural telephone, distant neighbors are brought nearer, and the family circle is widened. The dreary winter months are not so monotonous as formerly, for association by the distinctly personal element of the human voice is now possible without actual visiting. Advice, information, and gossip are freely exchanged, and many needless trips over weary miles of country road are saved. Taylor [57] estimates that there were at least 3,156,900 rural telephones in 1920.

Telephone service now extends over the whole globe. In 1926, there were 27,783,963 telephone stations in the world, sending messages over 85,975,588 miles of wire. In 1915, the Bell Telephone Company's system in the United States alone contained over nine million telephone stations. Since 1895, the number of daily messages and conversations has increased over tenfold. It has doubled since 1915. This means that at the present time one person out of every two, as compared with but one person out of every twenty seven in 1895, converses daily over the telephone.

Communication by photography is now within the reach of practically all classes in America. The "Brownie" camera costs but a small sum, and its films, developing and printing, are also inexpensive. Small pictures are within the means of the poorest workingman. The penny postcard, colored with great realism, is a cheap and wonderfully satisfactory means of communicating by mail.

Perhaps the most democratic of the new arts of photo-

[57] *Rural Sociology: A Study of Rural Problems*, New York, 1926, pp. 143–154.

graphic communication is the low-priced motion-picture show. At the "movies," a man and his family may spend the evening, see such a variety of "reels" that all tastes are pleased, and then, if disappointed, feel little sense of loss. Perhaps the patronage of the wage-earners of the nation, who have lived perpetually close to the sterner realities of life, supplies an element which the drama needs.[58] But the truly democratic character of the motion-picture is seen in its extraordinary diffusion as a means of entertainment. Bernard Shaw suggests that the "movies" will make it possible for our young people to grow up in healthy remoteness from the crowded masses and slums of big cities, without also growing up as savages.[59] It reaches the Russian *mujik*, the Chinaman, the Peruvian, as well as the New Yorker—in fact, all nations and ages, and both sexes. It has entered the daily stream of thought of the masses, for, while the technique of the theater was a subject for scholars and professionals, the crowd is quite capable of intelligently discussing the "movies." The common people know how the films are made, what the costs are, and the names of the leading actors. *The Nation* says that the producers of moving-pictures "have converted their entire audience into first nighters." [60] The masses are more than mere critics; they are authors. Everybody is writing moving-picture scenarios.

Under the caption, *The Future Home Theater*,[61] Mr. S. C. Gilfillan has anticipated the social effects of the "talking-motion-picture" in a somewhat prophetic article. He believes that the talking-motion-picture and the electric-vision apparatus connected with the telephone will eventually become so inexpensive that the apparatus will be installed in every house, like the country telephone, so that one may

[58] Eaton, W. P., "Class Consciousness and the Movies," *Atlantic Monthly*, vol. 115, pp. 48–56.

[59] *Metropolitan Magazine*, 1915.

[60] Vol. 97, p. 193.

[61] *The Independent*, vol. 73, pp. 886–891.

St. Nicholas, Jan., 1910

FIGURE 26

Comparison of *Mauretania* and *Clermont*

go to the theater and the opera without leaving home. This "home theater" will be a combination of the kenetoscope, phonograph, and telephone. When color-photography and stereoscopy are added, the scenes will be three-dimensional; not flat pictures, but vistas of reality. The device will send sight and sound from a central stage to millions of homes by using telephone wires as communicating means. The sound may be increased by use of the microphone, and thus made distinctly audible all over the room. The theater effect is completed by moving-colored-stereoscopic pictures thrown upon the wall.

Permanence of record—The overcoming of time. The historian of the future will find a wealth of material in newspaper files, current magazines, and books, which the earlier scholar could never have consulted. It is not hard to forecast the tremendous scientific importance for latter-day historians and sociologists of the great mass of material about commonplace events and happenings that is described with considerable accuracy in the news columns of papers and magazines of to-day.

This rich mine of printed verbal description is made vivid, accurate, and realistic as no former manuscript ever was, by photographic reproductions of the actual events. There is no escape from the evidence of a photograph and lithograph, and future scholars will be in a position of great advantage in studying the past.

By means of the motion-picture, the true movements of extinct animals and obsolete industrial processes will be preserved for coming generations. It will be possible to compare contemporary methods and scientific technique with those of the past. The motion-picture films of the World War will be of incalculable value to future students of military science. Realistic information about sports, games, and folk-dances can be indefinitely preserved. The peculiar grace of movement, the personal charm of facial expression of great actors, can be reproduced for the admiring

observation of coming generations of lovers of the drama. Edison has said: "The next generation of 'stars' will not die with their artistic death. The phonograph and the motion-picture will preserve them."

Old books which describe savage life depicted the natives in Europeanized appearance. All this was changed by photographic representation. Similarly, old hand-books on the music of primitive peoples contained Europeanized versions. The phonograph has remedied this error. Ethnological museums now contain collections of photographs of primitive peoples and primitive life, and also phonographic cylinders and gramophone disk-records of primitive music and languages. The great facility with which sound-records can be duplicated renders exchange easy, so that these precious records have wide distribution and may be preserved indefinitely. Tone-pictures should be taken of every rare and passing dialect, and of all old ballads, so that future students of mankind may have access to first-hand records of the past. The English language is changing. There was, in 1911, but one clergyman who could conduct divine service in Wendish. It was some time ago that the last man to speak the Cornish language died. The Mecklenburg dialect, in which Fritz Reuter wrote his *Onkel Bräsig,* is already obsolete. Many of the queer costumes of peasantry have already vanished, and folk-songs, country dances, and turns of rural speech appear to be fast following them.[62]

Social effects of the new communication. The disappearance of dialects and localisms before the standardizing sweep of universal ideas as carried by the new mechanism of communication is a phenomenon of general observation. Some consider this a serious menace to individuality, and see in it an ultimate dead level of uniformity in human thought and aspiration. De Toqueville, whose name has been

[62] Kelley, E. S., "A Library of Living Melody," *Outlook,* vol. 99, pp. 283–287.

associated with this doctrine, fears that the peculiar characteristics of each individual will soon be entirely submerged and lost in the general aspect of the world.[63] The naturalist John Burroughs maintains that our separate personalities are likely to be worn down and smoothed off by the constant intercommunication and friction of travel, streets, books, and newspapers, until we shall become like pebbles upon the same shore, and all alike.[64]

Cooley [65] finds encouragement and a key to this perplexity in the distinction that there are two different kinds of individuality, one produced by isolation, and the other produced by choice. The new communication fosters the latter and effaces the former. Modern conditions of communication are conducive to rational and free living, rather than to mere local and accidental existence. They enlarge and intensify the competition of ideas, so that the selective process is speeded up, and whatever persists because it has never been tested is likely to go, whereas that which is endowed with elements of universal truth is sure to survive and be increased. Any one who has penetrated into remote mountain communities is impressed with the local flavor of conversation and fashion of dress; and all persons who have spent a portion of their lives in great metropolitan centers where the modern mechanism of communication is most highly developed have observed the uniformity of style and the tendency of individuals with like interests, although separated by many miles of street, to get together in congenial clubs and groups. It would therefore seem that Professor Cooley's distinction is an adequate explanation of the situation.

This sociologist predicts the likelihood of diminution in local peculiarities of speech and manner, and in other curious and involuntary evidences of individuality. The ex-

[63] *Democracy in America*, vol. 2, bk. 4, ch. 7.
[64] "Nature's Way," *Harper's Magazine*, July, 1904.
[65] *Op. cit.*, pp. 93–94.

ample that suggests itself is the gradual disappearance of those diversities in dress, language, and culture which developed in Europe during medieval times. It is hardly possible that we shall ever see the development of small isolated communities with peculiar traditions, like the little baronies that former developed in the midst of large populations. It is improbable that modern cities will ever evolve the sort of architectural individuality we find in Italy, where each village was built as a distinct political and social unit. This will mean a loss of local color and of picturesque social types.

But compensation will be found in the creation of a more vital individuality. Special groups who cultivate peculiar phases of knowledge, art, conduct, or of any human interest, are already on the increase, and will probably become more numerous. Cooley believes that we will have uniformity only in those matters wherein conformity is cheap and convenient, but that in all activities wherein men care to assert themselves, to put themselves into their work, something distinctive will be produced. Thus the vital individuality of special interest displaces the accidental individuality of isolation.

Dr. Delos F. Wilcox, an authority on municipal problems, in recognizing that modern means of transportation and communication are reorganizing society according to interests rather than according to place,[66] notes that the principles of this reorganization run counter to political forms and habits. Our one-time practical interest in local institutions has suffered a good deal by the development of railways, steamships, telegraphs, and telephones, which have given men a certain obvious, although in some respects a quite superficial independence of locality. Business interests and modern concentrated industrial organization led men to work in offices, stores, or factories located in one part of the city, and dwell in houses, apartments,

[66] *The American City*, 1911, pp. 6–7.

or tenements in a distant section, or even a suburb. In such cases "political boundary lines are practically powerless, and men readily abandon their citizenship in ward, city, or even commonwealth, at the dictation of non-political interests."

It is common among business and professional classes for a man's friends and business associates to be scattered over the whole city, while he may not know his next-door neighbor's face or name. Since the majority of city men carry on their day's work away from their dwelling, the only time left to spend with their wives and children is in the evenings and on Sundays. Thus it happens that there is another strong motive to keep men from going down town after the evening meal.[67]

Yet in spite of these obstacles to the exercise of democracy based on locality, the city really emphasizes locality, and provides unusual opportunity for collective action and coöperation. It is possible for people to gather in mass-meetings at short notice. The press furnishes a medium for the expression of public opinion. Officials can be made to feel the weight of personal pressure without delay. The fault seems to be that the natural primary units of local democratic organization—the home and the neighborhood—have been weakened and in many cases almost destroyed by the increased facility of transportation and communication. Yet the new communication contains within itself the remedy for these temporary evils occasioned by the movement towards centralization. Public opinion has been aroused against the evils of decayed neighborhood life and the isolation of the home from civic affairs by means of magazine articles, novels, sociological books, press stories, "movies," photographs, and the movement for equal suffrage.

Professor Ross calls attention to the fact that the public mind is more open and responsive to readable accounts

[67] *The American City*, p. 234.

of contemporary oppression or political corruption than ever before. This comes about because competition of ideas has thrust out much gossip and trashy fiction, and so made room for a presentation of things as they are. Often this is more enthralling than fiction, and yet is quite true. The "muck-rakers," despite their sensationalism, have roused the public to a realization of contemporary wrongs and abuses. The spread of social enlightenment has been followed by active efforts to remedy social evils. An aroused public has turned the new instruments of intelligence to account in a very practical way, and has thrown the searchlight of social inquiry upon dark practices in convict camps, mill centers, coal fields, and copper districts.[68]

The perfected mechanism of the new communication lies ready to our hand, if we will but invoke its power of expression and diffusion in favor of those legitimate and local democratic interests which have suffered incidentally in the evolution towards higher centralization. A wider use of the school plant in every neighborhood, the introduction into the common school of the modern inventions of communication, and a more liberal education in everyday interests, suggest themselves as possible remedies for the loss of neighborhood autonomy.

The introduction of the motion-picture as a new educational device is not without its dangers. Democracy is successful both as it is the political expression of people who think for themselves, and the means of educating individuals in the same habit. Mere seeing is not necessarily knowing and understanding, and our use of the motion-picture for elucidating difficult points must not blind us to this fact. The only sort of education that counts is the kind that trains the individual to think for himself, clearly, independently, and critically. There is already far too much of the sort of education that consists in ladling out infor-

[68] "Free Communication and the Struggle for Right," *Pub. Amer. Sociological Society*, vol. 9, p. 2, Dec. 28, 1914.

mation. The motion-picture in education should avoid the danger of merely presenting predigested information which it pours into a receptive mind. Yet according to Dr. Leonard P. Ayres,[69] the dangers of the motion-picture as an educational tool, although real, are not necessarily inherent or unavoidable, because it can go beyond the mere imparting of facts, and be employed to organize, illustrate, clarify, and summarize knowledge which children have acquired by their own effort under intelligent guidance.

Aside from its uses in formal education, the motion-picture exerts considerable educational influence over its audience. But since the film is vastly more appealing and rousing in its effect than the printed word can be, and since it reaches and excites the non-reading classes, illiterates, and children, it has become necessary to exercise over motion-pictures a censorship[70] which has been abandoned as regards the printed word.

The new communication is, then, not in danger of reducing us all to a dead level of uniformity in thought and aspiration, since it encourages an individuality based on choice, rather than an accidental individuality that results from isolation. Yet just because it magnifies the importance of choice, and multiplies the occasions for the exercise of rational selection beyond anything before experienced in the history of human society, it adds the element of mental strain. In this new social order, it costs the individual more by way of brain-work to live, than it did in the old order. He has a broader outlook, which means that he must think about a wider range of matters; he is required also to have a more thorough mastery of his particular specialty.[71]

Nordau finds in this greater complexity of modern life,

[69] "Edison vs. Euclid, a Moving Stairway to Learning, with a Symposium," *Survey*, vol. 30, p. 687.

[70] *The Survey*, vol. 26, pp. 469–470; vol. 32, pp. 337–338; and *Review of Reviews*, vol. 50, p. 730.

[71] Cooley, *op. cit.*, p. 98.

with its inevitable wear and tear of nerve material, a cause for degeneration. It appears probable that the prime minister of a petty or second-rate state of a century ago had a more limited geographical horizon and less extensive intellectual interests than the average village inhabitant of to-day. The average "drummer" travels more, and sees more towns and cities, than did the reigning prince of earlier times. A petty tradesman or a cook sends and receives more letters than the average university professor did formerly. No matter how simple these activities are, every one of them involves an effort of the nervous system, and a wearing out of tissue. Our sensory nerves and brain centers are set in ceaseless activity by the countless stimuli that pour in upon our minds with every conversation, every scene perceived through the window of a street-car or a railway train, and every ring of the door-bell or telephone. There are many little shocks of railway and street-car travel, often unperceived by consciousness but which, combined with the perpetual undercurrent of noise in a large town and with our constant state of suspense pending the occurrence of progressing events, increase the volume of stimuli that costs our brain the wear and tear of effort at continual attention. Nordau further maintains that in fifty years the sum of a man's labors has increased tenfold, while population has not doubled, and that every civilized man now furnishes as much work as twenty-five men did half a century ago.[72]

Thus the very volume and complexity of intellectual stimuli that falls upon the individual mind from all quarters produce strain as the price of sustained animation, and superficiality as the cost of versatility. We may be becoming broad-minded, but it is at some expense to truth and depth. Cooley points out that, as there is an increase in self-consciousness and choice, there is a corresponding increase in the burden put upon intelligence, because op-

[72] *Degeneration*, p. 39.

portunities for the exercise of will have been vastly multiplied, and the responsibilities of character have become more complex. If the individual is to avoid being swamped by the flood of urgent suggestions that pour in upon him he must constantly make choices and decisions.

We discover, therefore, from an analysis of the character and effects of the new communication, that it holds forth both promise of good and evil. The same characteristics that have made modern communication the device for the spread of democracy—its great dispersive power from central sources of information—make it amenable to centralized control by arbitrary interests. Mr. George W. Perkins has said:

"Did any man in this room ever hear of a political leader, or a so-called statesman, delivering a speech in a state legislature or the National Congress, calling the attention of the people to the mighty changes that have taken place in the methods of intercommunication during the past twenty years and pointing out that, as intercommunication is the first requisite for doing business, these mighty changes are entirely responsible for the centralization of business?

"On the contrary, speech after speech has been made, haranguing our people with the grossly misleading statement that the trusts exist because of the tariff and the greed and avarice of a small group of men. A more pernicious and misleading statement has never been thrust on the attention of our people. . . . *The tariff never made a trust, and free trade never will destroy one. It requires only a little serious, intelligent thought to reach the inevitable conclusion that, if we were given free trade in this country to-morrow, not a single so-called trust would dissolve;* on the other hand, even though our tariff were put as high as the mountains, if that strange force that we call electricity were suddenly withdrawn from our use, and the telephone and the telegraph went out of existence, not a single so-called trust could continue for twenty-four hours. In all the hours and years of debate on the question of corporations and big business I doubt if a single speech has ever been made, calling attention to *the great fundamental fact that a volcanic upheaval has taken place in methods of intercommunication; that the ox-team, the stage-coach, the sailing vessel and*

the horse-car have been buried deep in the ashes of the past, and in their place have arisen steam, electricity, and the wireless. While this great change has come suddenly, it has come so naturally that we have scarcely stopped to realize that it has shaken the very foundations of our economics; for with the disappearance of old methods of intercommunication has disappeared the old school of economics, and with the advent of new methods of intercommunication has arisen a new school of economics.'' [73]

The remarkably complete military censorship during the World War is an example of this control. Even in peaceful times, the obscurity which covers dissemination of news by the Associated Press brings irresponsibility and distress. Yet the tremendous power of enlightenment possessed by this new tool supplies the self-regulatory element needed to correct its abuse by selfish interests if the people will assume responsibility for guidance and control through their representatives. It may take some time for a proper equilibrium to be reached, but the powerful impetus given by modern communication to the whole educational process is the bright promise of the future.

The subtler effects of communication by machines. Thus far we have outlined in rather general terms the effects on individuals of the increase in the volume of social stimuli produced through the introduction of the new machinery of communication. It is worth while to inquire into the subtler effects on human interaction and cultural change of these machines of communication. Let us then set before ourselves the task of analyzing this great volume of social stimuli into components which may help us understand some of the processes at work. To do this it is first of all necessary to attempt to classify the varied elements of the

[73] "The Outlook for Prosperity; Economics New Versus Economics Old," address before Economic Club of New York, Feb. 10, 1915. (Italics introduced by the author.)

increasing volume of social stimuli.[74] In any such classification it is important to avoid imposing upon the data rubrics essentially foreign to them. But the classification here set forth is simple and conforms to qualitative differences in the phenomena considered.

Direct social stimuli are those which occur in the face-to-face contacts of primary groups. Such stimuli are not transmitted through the mediation of mechanical devices. They are natural rather than artificial. Direct stimuli consist of laryngeal cries, tones, musical notes, articulate speech, facial expressions, gestures, bodily movements, tactile contacts, and social facilitation from the presence of others. Some of these are mere stimuli; others are forms of communication, i. e., stimuli which have meaning in the sense of control value to the organism giving or receiving them.

Indirect or *derivative social stimuli* are more artificial in character and are transmitted from some original human source or agency, but through the mediation and by means of some artificial mechanism or device. Such derivative stimuli are transmitted through print, the movie, the telephone, the radio, the phonograph, and in the externally stored values of furnishings, architecture and forms of art. Derivative stimuli may be mere stimuli or forms of communication as defined above.

Two further criteria of classification should be introduced at this point since the examples of direct and derivative stimuli just mentioned are not of the same importance in group life. Direct and derivative stimuli may be explicit and overtly expressed, or implicit and inert. With these distinctions in mind let us now summarize.

[74] Chapin, F. S., "Measuring the Volume of Social Stimuli: A Study in Social Psychology," *Social Forces*, vol. 4, no. 3, March, 1926, pp. 480–495. For another method of analyzing and measuring the volume of social stimuli of particular usefulness in the problem of the rural community, see Hawthorn, H. B., *The Sociology of Rural Life*, New York, 1926, especially ch. iv.

TENTATIVE CLASSIFICATION OF SOCIAL STIMULI

I. Direct social stimuli occur in greatest intensity in primary group contacts.
   1. Overt and explicit social stimuli.
      (*a*) Laryngeal cries, tones and musical notes.
      (*b*) Articulate speech.
      (*c*) Facial expressions.
      (*d*) Gestures.
      (*e*) Bodily movements.
   2. Inert and implicit social stimuli such as an awareness of the presence of others although no communication is taking place. Illustrated by experiments of the effect on work performed in a group and alone.[75]

II. Derivative or indirect social stimuli chiefly derived from secondary group contacts.
   1. Overt and explicit social stimuli.
      (*a*) By telephone.
      (*b*) By radio.
      (*c*) By phonograph.
      (*d*) By movie.
   2. Inert and implicit social stimuli. "Externally stored"[76] stimuli in
      (*a*) Printed books, magazines, and documents.
      (*b*) Illustrated books, pictures, etc.
      (*c*) Social values externally stored in house furnishings, buildings, architecture, and art.

Now the task of qualitative analysis does not end at a dead line and a new zone begin with quantitative analysis, for both forms of analysis are merely different methods of describing the same phenomena. Consequently in terms of the volume of social stimuli we may differentiate among the qualitative differences just set down. For example, direct social stimuli which are overt and explicit are circular in character, that is, there is a give and take of such stimuli. These stimuli form the components of what Giddings has so well termed the process of "interstimulation and re-

[75] Allport, F. H., *Social Psychology*, pp. 260–291.

[76] See Bernard, L. L., "Neuro-psychic Technique," *Psy. Review*, vol. 30, no. 6.

sponse." But direct social stimuli of an inert or implicit character are not circular responses. These stimuli go all in one direction, i. e., from the group to the individual; they are linear. Similarly in the case of derivative social stimuli, the overtly expressed communications by telephone are circular responses and are a form of interstimulation and response. The phonograph and the movie, are, on the other hand, mostly linear, although it is possible for a person to make his own records, e. g., records of his children's "baby talk," and to take movies of his vacation trip. However, these are not true examples of interstimulation and response. At any rate they are not as rich experiences or as numerous experiences as in the other instances. Similarly derivative social stimuli of an inert and implicit sort are not as generally circular responses as they are linear social stimuli. Letters are received and written, letters to the editor are printed, tracts and communications in *The New Republic* and elsewhere exhibit a circularity of response, but for the most part one passively receives the stimuli of the printed page, the work of art, and the architectural creation. One may criticize poor taste in furnishings, but the hangings do not "talk back."

One other psychological phenomenon characteristic of social stimuli as above defined and illustrated should be mentioned. This is the phenomenon of reinforcement. It should be noted that overt and inert social stimuli may support and reinforce one another, as when a lecturer illustrates his points by charts, diagrams and pictures. If discussion from the floor is allowed there may be considerable circularity of response or interstimulation and response. Some hearers may remain passive recipients of the lecturer's statements; others will supply corroboratory evidence to support his arguments; and still others will contradict. In any event it seems that ordinarily the volume of social stimuli is greater in the case of those forms of stimuli which lend themselves to circularity of response. At

any rate such stimuli are more vivid and intense as a general rule.

An examination of Figure 27 may help to clarify the whole matter. Here are presented for comparison three hypothetical cases. *A* shows an individual who is limited to primary group contacts. It will be observed that his distance receptors of sight, hearing, smell and touch are engaged in receiving stimuli and returning them in kind to a_1, a_2 and a_3, other members of his primary group. Moreover the effect of such inert social stimuli as the mere presence of these others when they do not overtly stimulate him is indicated by the band *f-f-f*. *A* enjoys to a full extent the values of circular responses. *B* shows an individual without any primary group contacts, such for example as a "modern" hermit. His distance receptors of smell and touch are denied social stimulation. His sight and hearing receptors are stimulated by and may in some cases respond to certain derivative social stimuli from his secondary group contacts, but through such unsatisfying and artificial intermediate mechanical devices as the telephone, radio, phonograph, print, and the movie. These stimuli are received through the mediation of artificial devices from unseen, unheard, untouched, and unsmelled outsiders. They are derived and abstracted from real persons. By contrast note the richness of social stimulation which *C* enjoys. He is a member of a primary group and has all of the social stimuli of *A*, but in addition all of the secondary social stimuli of *B*. This man *C* has multiple opportunities to engage in interstimulation and response and to profit by circularity of response, whereas *B* can rarely "talk back" and is condemned in large measure to being a passive recipient of linear social stimuli.

While these are extreme hypothetical cases, they may help us to see our way through this maze of complex stimuli that characterizes the process of social interaction in a

society which has at its command such marvelously efficient machines of communication.

Bernard [77] has given us one of the most thoughtful analyses of the effects of the modern machinery of communication upon the ways in which people group themselves in contemporary society. In pre-literate societies the primary

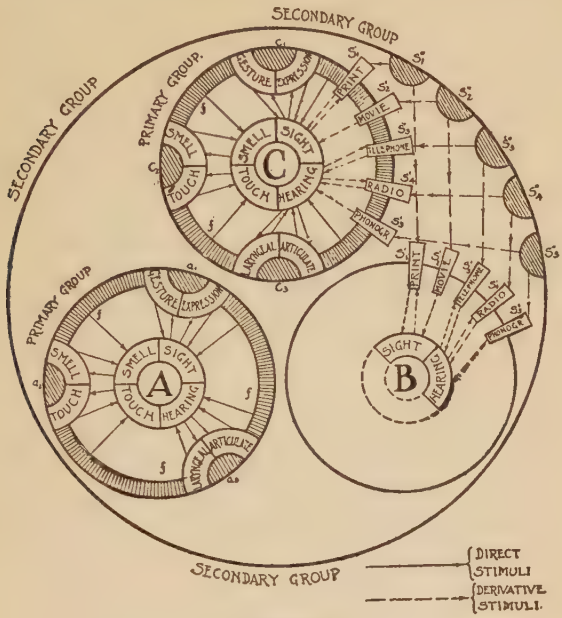


FIGURE 27

Primary and Secondary Groups and Social Stimuli

groups [78] of the family, the neighborhood and the play group exercised a dominant rôle. To-day the intimacy of the face-to-face contacts with the same people has given way to a multiplicity of superficial contacts with many people.[79] The old primary group functions of discipline, economic

[77] *An Introduction to Social Psychology*, New York, 1926, chs. 27–32.

[78] Cooley, C. H. *op. cit.*: Park, R. E., and Burgess, E. W., *Introduction to the Science of Sociology*, Chicago, 1921, pp. 161–167, 280–288.

[79] Zorbaugh, H. W., "The Dweller in Furnished Rooms: An Urban Type," *American Journal of Sociology*, vol. 32, no. 1, pt. 2, July, 1926.

production and transmission of the social heritage have been split off and are performed by many specialized secondary groups such as the school, the religious denomination, the factory, the library, and many others.

The machinery of communication which we have described has been invented mostly since 1800 and has provided these secondary and derivative groups with the means of communication they did not previously have. This makes the school, industry, the state, and other great derivative groups more influential and powerful and gives them a dominance over primary groups for the first time in history. Contacts have become long range and indirect. Derivative groups are not directly apprehended by ordinary sense perception, so that their nature and functions must be appreciated through rational processes of inference and induction—they are in a word less concrete and more abstract than the family, the neighborhood, and the play group.

The derivative or indirect social stimuli listed in Part II of the preceding classification are usually less real, less vital and less vivid than primary social stimuli, more because they occur singly and hence lack the force that inheres in facilitation than because they are intrinsically weak in volume. An example of this is the failure of radio broadcasting to effect the sweeping changes in human personality and social organization which its first ardent admirers predicted. It was thought by some students of the radio that it would revolutionize our culture. Nothing of the sort has happened. The reason is that stimuli received through the radio lack the facilitating stimuli which are usually associated in an intimate way with articulate speech, song and music, such for example as the visual stimuli of gesture, posture and facial expression, social facilitation due to awareness of the presence of others, the presence of gregarious attitudes, and circularity of behavior from

interaction. Consequently radio stimuli are after all rather thin and unsatisfying. Lindeman [80] and Benick [81] have independently come to the same conclusion as the one stated here. Whether the richer stimuli of the vitaphone and of television will enhance the effectiveness of these machines of transmission remains to be seen.

In conclusion, it may perhaps be worth while to venture the guess that the expressiveness of the new communication may have less significance for culture and more significance for individual psychology, since it relates to stimuli which build up, augment or release specific sets, in short it acts as a vehicle of suggestion. The other three characteristics of the new communication, speed of transmission in overcoming time, diffusion in overcoming space, and permanence of record, may have more enduring effects on the grouping of individuals in society and upon the accumulation of culture. These last three aspects of the new communication certainly have great significance for culture building and will no doubt determine many culture patterns to which human behavior will be conditioned.

[80] "Radio Fallacies," *The New Republic*, April 23, 1924.

[81] "Limited Social Effect of Radio Broadcasting," *American Journal of Sociology*, vol. 32, pp. 615–623.

CHAPTER X

THE CULTURAL LAG IN THE FAMILY[1]

WE have seen that the invention of power machinery[2] occasioned fundamental modifications in tools and in the recording and transmission of language symbols. These cultural changes are of such a tangible nature, however, that they are more readily seen and appreciated than the reverberations upon the structure of social institutions which followed their introduction. So subtle has been the process and so complex the results that we can hope only to suggest some of the more clearly defined changes wrought in the family institution.

Reverting for the moment to our earlier[3] analysis of the structure of the social institution, it should be apparent at once that the invention and introduction of power machinery has been accompanied by great changes in the *utilitarian culture traits* of all the fundamental social institutions. Nowhere has this phenomenon been more marked than in the family. The material equipment of industry and of the home has been revolutionized by the introduction of labor-saving machinery. The effect has been to strain severely, if not actually to disrupt, the fabric of relationships which holds together the four type parts of institutional structure: attitudes and conventionalized behavior patterns; symbolic culture traits; utilitarian culture traits; and descriptive language symbols.

[1] Chapin, F. S., "The Lag of Family Mores in Social Culture," *The Minn. State Conf. and Institute of Social Work*, St. Paul, 1924, pp. 54–62, and in *Journal of Applied Sociology*, vol. IX, no. 4, March, April, 1925, p. 241–249; also articles in *Survey Graphic* of Dec. 1, 1927, vol. 59, no. 5.

[2] See Chapter IX.

[3] See Chapter II.

When changes occur in one of the four type parts of institutional structure, in this case utilitarian culture traits, while the other three type parts remain relatively unchanged, it is obviously clear that we have a case of cultural lag. This is exactly what has happened in the case of the family institution. Another way to look at the problem is as an example of stratification.

Stratification of social classes is a familiar phenomenon in history from the slaves, the priests and nobles of ancient Egypt up to the proletariate and plutocracy of contemporary society. But the stratification of social culture passes unnoticed until our attention is focused upon it. As a matter of fact, our customs and mores show a stratification from non-material culture down through various intermediate layers to the lower levels of material culture, which is more directly adapted to the geographic environment. The stratigraphic culture column for the family mores is shown in Figure 28 and tables A and B on page 315.

We live in a dynamic and not a static world. Geological strata are eroded by the ceaseless action of rain, ice, heat, winds, and the attack of micro-organisms, and are disturbed by the eruption of volcanoes and the shattering effects of earthquakes. Similarly, there is change in social stratification although the form of change is dissimilar. Great changes have occurred in our industrial system, or in what may be called our material culture, while our non-material culture (except for science) has remained practically static. To-day the mores of the monogamous family and the mores of the Christian religion are much as they were in the agricultural economy of the eighteenth century, whereas in modes of producing consumers' goods, the motor tractor, the steam-power looms, and the electric printing press are radically different from the primitive machines of the eighteenth century. The manufacture of woolen garments has been revolutionized since 1700 by the introduction of automatic machinery driven by steam-

power. Yet the creed and ritual of the orthodox church have hardly changed. Why have the changes been more considerable and more frequent in material culture than in non-material culture? There are two chief reasons: first, inventions and discoveries have been applied to manufacturing production; second, the test of an experiment with a new method in material culture is decisive and imper-

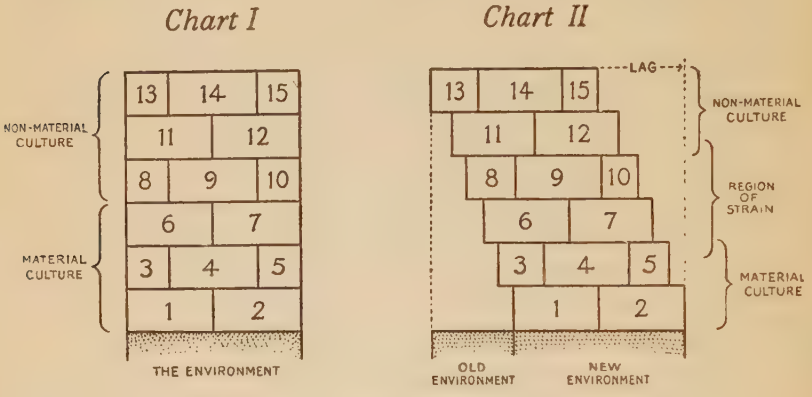


FIGURE 28

The Stratigraphic Culture Column

sonal. These two considerations do not apply to the levels of non-material culture such as religious mores and family mores in anything like the same degree as to the level of material culture. Compare the definite advantages of steam-power over horse-power with the uncertain results of trial marriage as against strict monogamy.

Now this failure of the non-material culture of our day to change as rapidly as material culture changes, creates cultural lags and results in discord and dissatisfaction. Some say the church is out of date because it fails to face the issues of public ownership of natural resources, the taxation of incomes and inheritances, and other questions of industrial society—for the church is still adapted to the conditions of a primitive agricultural economy under which

TABLE A	CULTURAL LEVEL	TABLE B
Spinning Wheel and hand loom	1	Machinery driven by steam
Home, shop and by-employments	2	Factory with many "hands"
Handicraft tradition of skill	3	Specialized tasks by unskilled workers
Home garden and live stock	4	Multiple city dwellings
Home cooking and domestic arts	5	Canned foods, cafeterias and ready-made clothes
Community gatherings, corn huskings, etc., etc.	6	Commercialized recreation, movies, public dance halls, etc.
Settled abode and property ownership	7	Rented tenements and frequent moving
Odd jobs for children and old folks	8	Child labor laws, pensions and social insurance
Parental discipline and family standards	9	Clash of old and new world standards and compulsory education laws
Large families and mutual helpfulness	10	Small families, childless couples, neurotic housewives
Woman not so much a drudge as the competent administrator of a domestic establishment, with serious traditions of domestic arts	11	Economic independence of women who enter factory, business, and the professions
Divorce unusual because it disturbs economic partnership	12	Increase in divorce and on petitions by women
Economic independence and self-sufficiency of the home	13	Justifiable interference in family situation in interests of vocational guidance, leisure time supervision, and public health, resented
Dowry practice and economic security for all children	14	Forced marriage and ostracism of the illegitimate child, laws making illegitimate child the ward of the state
Common law marriage reasonable, satisfactory	15	Common law marriage a travesty in 24 states that permit it, although abolished in England 150 years ago

EXPLANATION OF CHARTS I AND II AND TABLES A AND B

CHART I shows the *stratigraphic culture column*, with detailed explanation in table A. This chart shows a state of rest, of adaptation or adjustment. If now, we think of the column as representing so many bricks in a pile, with a force brought to bear upon the tower of bricks, in a left to right direction, we would find that the lowest layer of bricks would be pushed slightly to the right, but that the upper layers would resist this change through inertia, so that an overhang to the left would result as shown in Chart II. This is, then, a condition of maladjustment between the different layers of culture, with the overhang to the left representing a *lag*, with detailed description in Table B. The layers of material culture (maintenance mores) are shown at the bottom, the layers of non-material culture (secondary mores), at the top, with a region of strain in between. In this region there is a tendency, according to Sumner, for mores to become better adapted as means to ends, and for mores to become more consistent with one another.

it originated. We say that our schools are behind the times because they do not supply technical and vocational training in anything like the extent needed in an age of machinery.

Let us inquire into the condition of change in material culture. Sudden changes (by invention) in material culture are due to the fruition of a quiet process of fermentation of thought in related fields which have reached a favorable cultural threshold. As a great deal has been written [4] about this phenomenon, we shall stop merely long enough to summarize the matter in general terms.[5] Basic sciences must first supply the discoveries which permit new combinations and applications of scientific knowledge and practical technique. The inventions are inevitable, given the antecedent conditions of a favoring cultural threshold. This coincidence of favoring cultural occurrences, viz., the combination of circumstances such as the creation of additional markets in the new world, the invention of machinery, the discovery of steam-power, and the discovery of new resources of coal and iron, causes a sudden expansion of material culture so that it grows and elaborates by leaps and bounds until it far outdistances the slower changing non-material culture, and the lag between the two levels becomes painful and constitutes an acute social problem. One concrete example given by Ogburn [6] will serve to make the matter clear.

The introduction of steam-driven machinery came from a series of inventions and discoveries in related fields. Its use spread from textile manufacture to other forms of production. Factory conditions became widespread. Specialization of manufacture extended rapidly. The human organism found it difficult to adjust its bodily economy to the rhythm of the machine process, and strains and fatigue piled

[4] See writings of Bernard, Goldenweiser, Lowie, Ogburn, and Wissler.
[5] Detailed treatment will be found in Chapters XI and XII.
[6] *Op. cit.*

up. Meanwhile the number of work accidents increased enormously, leaving in their wake a trail of helpless cripples, broken families, widows, orphans, and dependents. As late as 1917 there were 28,000 deaths, 875,000 partial and total disabilities lasting four weeks or more, and 3,000,000 temporary total disabilities in American industries. In the face of this change in methods of manufacture with its trail of disastrous after-effects, the old employer's liability law persisted as the only legal means of adjusting the family situation to the effects of changed industrial processes. This old law was a survival of English common law practice and even earlier Roman law, and represented a hold-over from a simple agricultural economy into the complex industrial civilization of America. It was only with the slow adoption of the workmen's compensation laws by our state legislatures beginning in 1912, that a gradual and tardy adjustment of non-material culture to the changes in industry was effected. Study of the industrial situation in 1870 shows that the workmen's compensation laws should have come then, when, as a matter of fact, it was 1915 before this means of adjustment had been adopted to any wide degree in American commonwealths. There was thus a period of forty-five years during which non-material culture lagged behind changes in material culture.

Now we have stated that the mores of the family also lag in social culture. Changes in material culture have revolutionized the family as a home environment, as a place of work, as a place of recreation, and as a center of protection. These changes have involved splitting off the original functions of the family and breaking down its old system of mores. Unfortunately this splitting-off process has been going on without much conscious guidance because there has been little depth in our knowledge of (1) the permanent social values of family solidarity, or (2) which social changes are relatively beyond the individual's control and

which can be collectively controlled. Our attitude has been one of passive observation alternating with one of indiscriminate interference.

Let us examine this splitting-off process first by considering the mores of the stable agricultural family, and second by considering the situation of the present urban family.

The family mores of two centuries ago were, on the whole, well adjusted to the economic conditions of the time. Defoe has drawn a picture of life as follows: "The land was divided into small enclosures, from two acres to six or seven each, seldom more, every three or four pieces of land having a house belonging to them; hardly a house standing out of speaking distance from another. We could see at every house a tenter, and on almost every tenter a piece of cloth or kersie or shalloon. At every considerable house there was a manufactory. Every clothier keeps one horse at least to carry his manufactures to the market; and every one generally keeps a cow or two or more for his family. By this means the small pieces of inclosed land about each house are occupied, for they scarce sow corn enough to feed their poultry. The houses are full of lusty fellows, some at the dye-vat, some at the looms, others dressing cloths; the women and children carding or spinning; being all employed, from the youngest to the oldest." Reminiscences of these conditions are found today among the Kentucky mountaineers. The "bull-tongue" plow is still used to prepare the soil for planting and is also used for furrowing. The wooden harrow is used. Women and children hoe the corn when it is large enough to cultivate. When the corn is ripe, all members of the family turn out "to pull fodder." Wheat and oat grains are cut by hand and threshed by flail on the bare ground. To separate the chaff from the grain, the women flap their aprons or a bed sheet as the grain is being poured from one basket to another. With most of the cabins a forge is found under

an open shed or in an outhouse, for the men are their own gunsmiths, wagoners, cobblers, and carpenters. One farmer will serve the whole community as storekeeper, magistrate, veterinarian, and "tooth puller." Many cabins have their own handmills for grinding corn, and it is a poor mountaineer who cannot shoe his own horses and steers. Houses, furniture, baskets, and other household articles are homemade. In some sections small quantities of cotton and flax are grown for muslins and linens and the entire household raiment and furnishing are made by the women. The primitive spinning wheel and hand loom are in use. Mountain women make woolen dress goods which are highly esteemed. Quilts, coverlets, blankets, and the like are manufactured, and the bride brings as her dowry a collection of these quilts which are handed down to her children as prized possessions.

These being the material conditions of life, we are informed by observers that the average mountain home is a happy one where there is little worry and less fret, and where nobody's nerves are on edge. Family ties are said to be stronger in these homes than anywhere else in contemporary America, for the mountaineer is passionately fond of his humble home and family. Although the father is lord of his home, he consults his wife about family matters. Nevertheless the position of the woman, responsible as she is for the chores about the house, such as milking, feeding the stock, raising chickens, carrying water, attending to the garden, in addition to home industries, is a hard one. Yet she seldom complains and divorce is relatively infrequent here, as compared with the urban regions of the state.

These two pictures of the family before the advent of the industrial revolution may now be summarized. The family was an economic institution as well as a biological and affectional one. It possessed recreational, educational,

and protective as well as economic functions. The woman's duties of spinning, weaving, sewing, preparing food, and gardening, were as economically important as the man's different activities. Divorce was consequently infrequent because it disturbed these fundamental and supplementary economic and industrial activities. The family afforded a place where boys learned their trade, and where girls were trained to be skilled housewives. Owing to its settled abode and definite resources in property, dependent kin were easily protected and cared for.

In the simple and stable village community of the eighteenth century, family mores and public opinion exercised a fairly satisfactory control over marriage. Common law unions might be happy affairs with adequate provision for the child. Marriage could be a personal affair since it must follow the grooves of custom and was at all times subject to the control of neighborhood gossip. Stable residence, home industries, and dowry practices guaranteed economic security.

To-day the family is no longer the stable social unit for the socialization and control of the child that it once was, and this is chiefly because changes in the social-economic environment have taken away its former undisputed prerogatives. The factory system of machine manufacture brought about the extensive utilization of unskilled workers in the manufacture of complex products once committed only to skilled handicraftsmen. This has been accomplished by specialization or minute subdivision of tasks. Decline in home industries such as spinning, weaving, and by-employments has accompanied the expansion of the factory system. Congested urban living has made the home garden impossible. There is little place for children's play. Homes are often rented dwellings, or, more likely, flats or tenements. The city population is preponderantly migratory, shifting and propertyless.

The effect of these new conditions on the family mores

has been tremendous and often disastrous. Employment is largely outside the home in factory, business, or commercial enterprises. Wage-earning women leave their children at day-nurseries, and the birth-rate has declined. The requirements of the factory, business and the professions are so technical that special public provision is made for education and training outside the home. Large-scale industry with its high-power machines can find no adequate training facilities in the home. We have manual training and mechanical schools, and commercial and business high schools. With the decline of home trades and the domestic arts, courses in domestic science given through the public schools replace home training. Meals are bought outside the home at the cafeteria or restaurant, manufactured canned goods or cooked foods may be had at the bakery, drug store, or delicatessen. The stuffy and unattractive city flats drive children out of the home in search of recreation, only to find no play space. Commercialized recreation has responded with the public dance hall, the soft-drink parlor, the pool-room, and the movie palace.

Every social worker is familiar with the clash of old and new world family mores that takes place in the immigrant home. Earlier protective and disciplinary functions have been taken out of the home. Compulsory education laws with the attendance officer are now part of the modern city's educational system. We have child-labor laws and factory inspectors, the juvenile court and probation officer, and other children's protective agencies with their staffs of specialized social workers. With no permanent place of abode, the urban family lacks resources for the care of aged dependents, few light tasks are to be done and the wage system leaves little marginal income. Hence we find homes for the aged, pension systems and public relief. The family physician has almost disappeared and the clinic, dispensary, hospital, and sanitarium provide medical care outside the home.

Machinery[7] has entered the home to lessen the domestic drudgery that remains, so the housewife with few or no children, who stays at home, may find time heavy on her hands, and may have as a consequence emotional conflicts and neuroses. Woman, released from home responsibilities, seeks responsibilities outside the family in varied occupations, the professions, the club, or in civic activities, and has gained her economic freedom. These facts, together with the others, have made the marriage union less stable and divorce more frequent.

To summarize this phenomenon of the splitting off of earlier family prerogatives, we may say that now such secondary groups as a consolidated school system, a municipal playground and recreation department, a religious denomination, and a factory or trade-union school, assume responsibility for physical welfare, discipline, recreation, religious and moral instruction, and vocational training, of children. Figure 29 illustrates this tendency. The blank spaces in the family circle show functions now often transferred from the family as a primary group to the secondary groups indicated. The point to be made here in connection with our analysis of social stimuli is that this process of transfer has tended to increase derivative and inert social stimuli at the expense of direct and overt social stimuli. There is less circularity of response and more linear social stimuli. Less reality and more artificiality. Now the emotional effect of this transfer from direct to derivative social stimuli has not often been noted and deserves serious consideration. The point is that the sentiments of loyalty, admiration, gratitude, reverence, awe, and respect, are built up most easily under conditions of emotional excitement prevalent in primary group contacts in which there is give and take of social stimulation and response. The natural clustering of attitudes and sentiments in the old family sit-

[7] See "Women's Contributions in the Field of Invention," *United States Dept. of Labor, Women's Bureau, Bulletin no.* 28, 1923.

uation leads inevitably to emotional reinforcement and emotional facilitation that builds strong character. Specific situations, specific tasks, act as so many concrete social stimuli and are always intensified by the circularity of response. When parents were the leaders in games, in skill of workmanship and in example of integrity, sentiments of

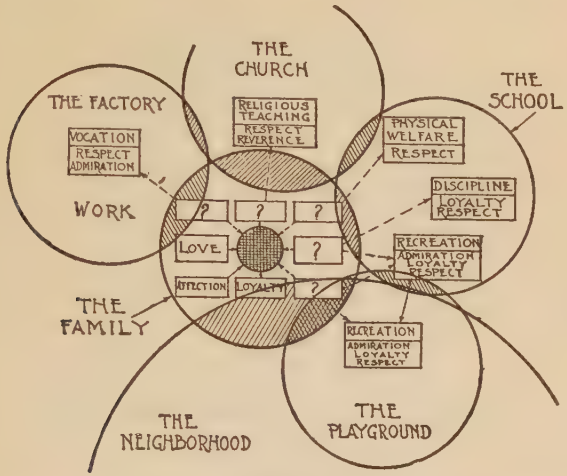


FIGURE 29

The Splitting Off of Family Prerogatives and Weakening of Emotional Ties

loyalty, admiration and respect were built up round fully known personalities, and reinforced one another. Mere affection was supplemented by personal loyalty that developed out of leadership situations in games, in religious observances and in work. This situation is shown in Figure 30 in slightly different form.

Perhaps a sufficiently detailed treatment of the concept of the cultural lag in relation to the family has now been presented so that we may return to the problem stated at the beginning of this chapter: namely, the interpretation of family disorganization in terms of cultural lags among the four type parts of the structure of the family institution. It is evident from the facts that the utilitarian culture traits

of the family institution, such as home equipment and labor-saving devices, as well as the utilitarian culture traits of the supplementary institutions of industry, school and church, have gained by the application of mechanical inventions, whereas the attitudinal and traditional factors have tended to lag.

ADMIRATION AND RESPECT IN STANDARDS OF WORK
RESPECT BECAUSE OF DISCIPLINE
ADMIRATION OF LEADERSHIP IN GAMES
LOYALTY AND RESPECT IN GAMES
RELIGIOUS LOYALTY
PERSONAL LOYALTY
AFFECTION
LOVE
ZONES OF ATTITUDES AND SENTIMENTS NOW WEAKENED OR PREEMPTED

FIGURE 30

Zones of Attitudes and Sentiments in the Family Institution Now Weakened

The old attitudes of parents towards children still persist. Many parents still see their relationship to the child in terms of proprietorship. They emphasize what the child owes them in obedience and service rather than what they (the parents) owe the child in providing opportunities for self-development in a changed social order. This attitude represents a lag in family mores. Traditions of the old partiarchal family still tend to make the child the focus of selfish pleasure, a projection of the parents' ego. The persistence of other old mores is seen in the attitude of

the conventional family toward illegitimacy. Forced marriage "to make her an honest woman" illustrates, whenever carried out in defiance of what we know of bad heredity, disease, and a reasonable basis for possible congenial companionship, a lag in family mores. Another example of the persistence of old mores is the fact that common law marriages are still tolerated in many of our states, whereas England abolished this type of informal contract marriage a century and a half ago. Here we have a cultural lag of 150 years, although conditions in American cities are to-day, because of migrations, immigration and general mobility, vastly more fluid than in England at the time when common law marriages were outlawed.

Not only in the attitudinal type part of the family institutional structure do we find lags, but also in the symbolic culture traits and in the descriptive language symbols of the family. The religious solemnization of the marriage ceremony now has chiefly symbolic value, inasmuch as most states require a written marriage license. Once the religious ceremony constituted the authoritative language record; now it has become symbolic. The dowry practice tends to function as a symbolic rather than as a utilitarian culture trait. Even in the descriptive language symbols of the family institution, we find lags; witness the presence of the word "obey" in the religious verbalization of the marriage ceremony. Thus it seems that symbolic culture traits were often in their original form utilitarian traits. They persist through inertia after their utilitarian value has passed, and come to function symbolically as culture traits.

Although we cannot measure with precision the length of the lag of various family mores in culture, social workers have for many years been attempting to adjust the difficult situations occasioned by these lags. In general, we may say that the lags in family mores may be overcome in two ways; first, by adjusting the social environment to the permanent social values of the family, i. e., good physical

and mental heredity including special talents in art, music or mechanics, and also good emotional equipment for family affection, loyalty and pride; and second, by adjusting the family mores to the inevitable changes in the social-economic environment. Inevitable changes are those which lie beyond the control of individuals acting individually and are such as have been caused by the introduction of machinery and the factory system in conditions of work, recreation, and home.

Now these adjustments can only be made with scientific accuracy when our knowledge of the family has arrived at a cultural horizon favorable to the invention of new methods of adjustment. This horizon is reached whenever discoveries and inventions in related basic fields have supplied the scientific knowledge for intelligent procedure. The greatest progress is possible when we pass from a stage of empirical (trial and error) invention in a given field of knowledge, to a stage of projected (scientific) invention. In the present case the related basic fields are the sciences of biology, psychology, and sociology, with possible aid from economics and political science.

Let us consider for a moment how the basic principles of biology, psychology, and sociology have provided the cultural horizon for making improved adjustments in family mores. In the first place the subject of marriage legislation is receiving consideration in conferences of social work. We know enough of the laws of heredity to appreciate the unwisdom of consanguineous marriages, and to know the dire after-effects of marriage when inebriety, venereal disease, feeble-mindedness or mental disease exists in either party. Consequently we strive to adjust the social environment of public opinion, convention, custom, and law, to the requirements of good heredity with its potentiality for high social values, by enacting laws which deter haste in marriage and seek to prevent the union of persons with congenital defects. In illegitimacy cases an effort is made to

adjust the psychic environment to our new knowledge of the potential social values of child life. We advocate civil procedure in these cases, although, in so far as the form of the action is similar to that used in criminal law, we have failed to catch up a lag in non-material culture. Forced marriages are often the first step toward divorce, and the difficulties that social workers have in handling the problem of the unmarried mother are largely matters of adjusting public opinion and obsolete family mores to the recently discovered basis of family solidarity.

A second example of our new knowledge of the basis of family solidarity is the case of using genuine talent for art, or music, or mechanics, which one or more members of the family possess, as the focus of family sentiment. Social workers know how the possession of a special talent may be made the rallying point for family affection, loyalty, and pride, and how a situation may be stabilized by the discovery of this great asset. The stern old family mores of patriarchal control need to be adjusted to take account of this great native social value in their midst. The opportunities of the social environment in the form of art or mechanical education, as the case may be, may be exploited in such instances.

A third example is the way in which our new knowledge of the sound affectional and emotional basis of family life enables us to adjust family mores and the social environment in the interests of realizing the permanent social values inherent in affectional elements. Case No. 20 of the Judge Baker Foundation series illustrates how modern knowledge of psychology, psychiatry, and sociology aided in securing an adjustment where no organic defect existed although the hereditary factor was doubtful. Edward, age fifteen, stole large and small amounts over a period of several years. His father and mother had delinquent habits. Since the boy had been brought up in a good home of relatives and showed no physical or mental disabilities, the

fault was thought to lie in the fact that he knew that his mother stole and was conscious that she was lacking in devotion. He was sensitized or conditioned on the subject of his mother, and stealing was his reaction to this conditioned response. After several unsuccessful experiments with foster homes under the jurisdiction of the court, a satisfactory foster home on a large farm was found through experts of a delinquency clinic. After several months the boy voluntarily went to the wife of the farmer and confided to her his story of mortification at his mother's conduct. This talk was the beginning of a new mother and son relationship on a higher plane. Affection, love, and respect developed and the boy's conduct improved and he became a different person. Even more striking cases than this could be described. On the other hand, scientific knowledge of the human organism has shown us how futile adjustments are in the case of organic lesions, as in encephalitis.

But when all is said and done about adjusting family attitudes and mores and the social environment to the permanent social values of the home, it is still necessary to attack our problems by adjusting the family mores to the *inevitable* changes in the social environment. The splitting-off process described earlier in this chapter enumerated the controls taken out of the hands of the family by changes in material culture. The problem here becomes one of developing new family attitudes and mores that will correspond to the new social environment, since the old mores have been broken down by changes in material culture. The new attitudes needed are new parental attitudes. We must frankly face the fact that recreation outside the home has come to stay. This suggests that parents learn to participate in community affairs in order to select wholesome leisure-time activities for their children. If they are actively interested in the establishment, supervision, and maintenance of public playgrounds, censorship of movies, inspection and regulation of dance halls, and in supporting child protective

legislation, then new attitudes and mores of civic participation will have a chance to develop. When parents know and understand with reference to family needs such movements as Boy and Girl Scouts, Campfire Groups, wider use of school equipment, and school self-government, as well as the enforcement of compulsory attendance and health laws, other new attitudes will be developed. Sociology is the science which describes and analyzes the practical and theoretical aspects of these new developments in the social environment. To this science we must turn for guidance in adjusting the mores of the family to the inevitable changes in the socio-economic environment.

In conclusion, to overcome the lag of family mores in social culture, we face the problem of adjusting the family controls on a new level:

1. with a more restricted range and less concrete means of control;
2. but with a more scientific understanding than ever before of the
   a. permanent potential social values of the family, and
   b. of changes in the social environment which are inevitable.

PART IV

THE MEASUREMENT OF CULTURAL CHANGE

CHAPTER XI

THE INVENTION OF CULTURE TRAITS: POLITICAL INVENTIONS

IN the preceding chapters frequent reference has been made to the primary importance of invention in cultural change. Written language has been cited and treated as one of the most important inventions in culture,[1] because of its external storage function in preserving and transmitting the social heritage. We have reviewed the rôle of mechanical invention in the eighteenth, nineteenth, and twentieth centuries as related to revolutionary changes in the social and economic order.[2] It now becomes necessary to consider, first, social invention as contrasted with mechanical invention; and second, the subtler aspects of the process of invention as a primary form of cultural change.

Inventions in the field of social relations possess elements of complexity which have hampered the scientific study of them. By contrast, mechanical inventions deal with tangible material substances and possess objective structural forms susceptible of relatively exact measurement. And yet whatever the intangibility of social inventions (inventions in non-material culture), they lie all about us and crop out at unexpected places and in surprising forms. Inventions in the field of social relations are: the juvenile court, the probation system, the parole system, the community chest, the confidential exchange, the stock exchange, the United States Federal Reserve System of Banks, the short ballot, the initiative, referendum and

[1] Chapter II.
[2] Chapter IX.

recall, the commission form of municipal government, the city manager plan, and so on.

Psychological study of invention has been confined largely to research on gifted individuals and leaders. Such study is well worth while and has thrown light on different individual factors functioning in situations requiring originality for solution. But social science has other resources for the analysis of invention. The individual approach, valuable as it is, necessarily loses sight of certain factors in the interplay of social mass phenomena, that require for their study techniques different from the controlled experiments of the laboratory psychologist. These techniques for the study of social mass phenomena are being developed by historians, social anthropologists and sociologists. One such technique consists in utilizing: (1) an historico-statistical analysis guided by certain concepts such as, (2) the cultural threshold, (3) the accumulation of culture, and (4) the diffusion of culture. It is the purpose of this and the following chapter to apply this technique to the study of such political inventions as the commission form of municipal government and the city manager plan as they have developed in the United States. This method of study will throw light also on certain principles of social psychology as distinct from individual psychology.

1. Invention of the Automobile

Since social inventions are complex in the sense of intangibility of structure and lack of standardization of parts, it will be helpful in the interests of clarity of thought to consider first a complicated mechanical invention—the automobile. In this way we will get clearly in mind the outlines of the process and the essential elements of structure involved.

Although Newton proposed a model steam-carriage in 1680, it was not till 1790 that Read constructed a steam-

carriage. From 1802 and afterwards, steam-carriages that could be driven were constructed. But it was not till 1886 that the internal combustion gas-engine was invented and not until 1895 that the automobile in the modern sense was invented. In the latter year, George B. Selden patented a working model of an automobile, for which he had filed a United States patent as early as 1879.[3] Apparently his earlier efforts were premature—ahead of his time. The invention combined old mechanical principles into a new pattern. These were: (1) liquid gas-engine, (2) liquid gas receptacle, (3) running gear and mechanism, (4) intermediate clutch or disconnecting device and reverse, (5) drive shaft, and (6) suitable carriage body. It was the integration of these indispensable elements already known into a new working arrangement or pattern that constituted the essence of the new invention.

All of the essential elements were previously known and formed a part of the material culture of the period. The gas-engine had been invented in 1860. A cooling system by use of a water jacket had been used in 1833. Differential gears were known in 1840. Lambert had used a friction clutch and drive as early as 1891 and Levassor a clutch and gear box in 1887. Pneumatic tires were invented in 1845 and again in 1883. Thus the stage of mechanical invention in material culture was ripe for the original mind to combine these elements into a new pattern or a new invention.

Figure 31 illustrates the principle that the invention of the automobile was the combination into a new structure or pattern of six groups of essential elements. Our analysis and the accompanying figure bring out several points: first, the new invention was new only in the sense that the particular pattern or combination of elements it represented had never been made before; second, the elements out of which the new pattern or invention was made were already known and utilized; third, the new pattern was not integrated un-

[3] *The Scientific Monthly*, vol. 100, 1911, p. 223.

til all the elements essential to its working unity were ready to be combined (the friction clutch and drive had to be

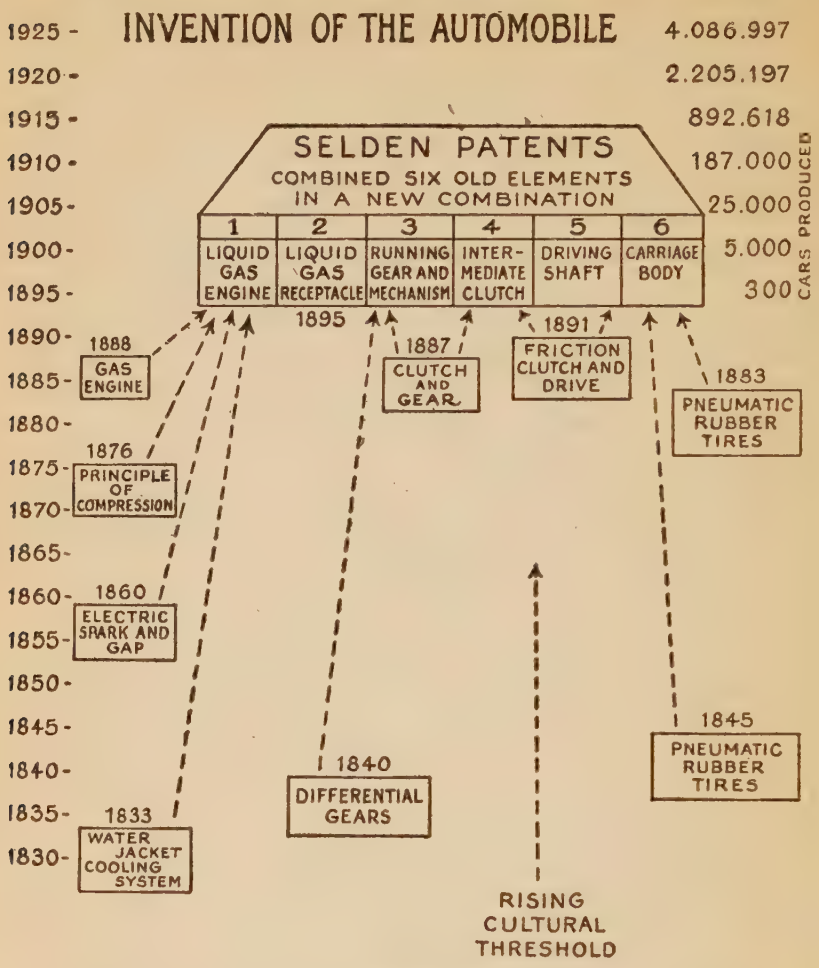


FIGURE 31

Invention of the Automobile Showing the Integration of Six Known Culture Traits into a New Pattern

perfected before the automobile was practicable). The first point emphasizes the importance of the pattern; the second, the importance of integration; and the third, the im-

portance of the threshold of mechanical culture. Let us now consider a case of political invention and see whether the phenomenon is similar to or dissimilar from that of mechanical invention.

2. Invention of the Commission Form of Government

A great hurricane followed by a tidal wave and flood devastated the city of Galveston, Texas, on September 8, 1900. The city government was immediately faced with a most urgent need of preserving order, relieving those in want and planning wise rehabilitation measures. Under the pressure of this catastrophe the existing bi-cameral system of city government, with its mayor, common council and board of aldermen, broke down and failed to function. It was at this juncture that a committee of substantial business men of the city took up the matter and attempted to meet the desperate situation.[4] A sub-committee of three men set to work to gather information about the government of other cities in which the principle of corporate business enterprise of concentration of power and responsibility had been tried out in the management of municipal affairs. They secured the charters of several cities including Baltimore, Md., and the legislation covering the city of Washington, D. C., and the Taxing Commission of Memphis after the yellow fever epidemic of 1878. Their study and deliberations led to the proposal that a commission of five persons be appointed to govern the city. Concentration of both power and responsibility in a small group of five men set up a form of city government as nearly as possible like the board of directors of a business corporation. The original plan called for commissioners as part-time civilian and advisory heads of departments rather than as expert professional heads. This latter principle came into effect later. The com-

[4] Bradford, E. S., *Commission Government in American Cities*, New York, 1911, pp. 3–23.

mittee which devised the plan did not at the time realize that they were inventing any new form of political structure.[5] They felt that they were merely meeting an acute problem.

The success of this new plan of municipal government influenced the neighboring city of Houston to obtain a new charter embodying the commission form of government. It went into effect in 1905. Houston retained the five commissioner arrangement of Galveston but in other ways changed the plan. The commissioners were not elected by wards but at large. The mayor was given greater power. There were other differences, but the outstanding addition to the pattern was a referendum on franchises and bond issues.[6]

The fame of the Galveston plan spread to Des Moines. Here a meeting of citizens listened with interest to the city attorney's account of his visit to Galveston and what he there observed. Other meetings and discussion followed. As a result a commission was appointed to prepare a bill for submission to the Iowa legislature. Although the bill was presented to the legislature during the winter of 1905–1906, it failed of passage because public sentiment had not sufficiently developed in its favor. Discussion was continued, however, and, after a committee of citizens had visited Indianapolis to study its plan of government, a public debate was held early in 1907. Those advocating the Galveston form prevailed, and a second bill was drawn up and presented to the legislature. This became a general law on March 29, 1907, permitting any city of over 25,000 population to adopt the commission form on vote of a majority of its electors.

To the earlier patterns of Galveston and Houston, new elements were added.[7] From Galveston came the five commissioner arangement and from Houston the referendum.

[5] My authority for this statement is Mr. Harvey E. Walker.
[6] Bradford, *op. cit.*, p. 26.
[7] *Ibid.*, ch. 3, and pp. 311–333.

To these elements the following new ones were added: the recall of unsatisfactory officials was borrowed from Los Angeles (1903); the initiative in combination with the referendum was probably suggested by Dallas (although a

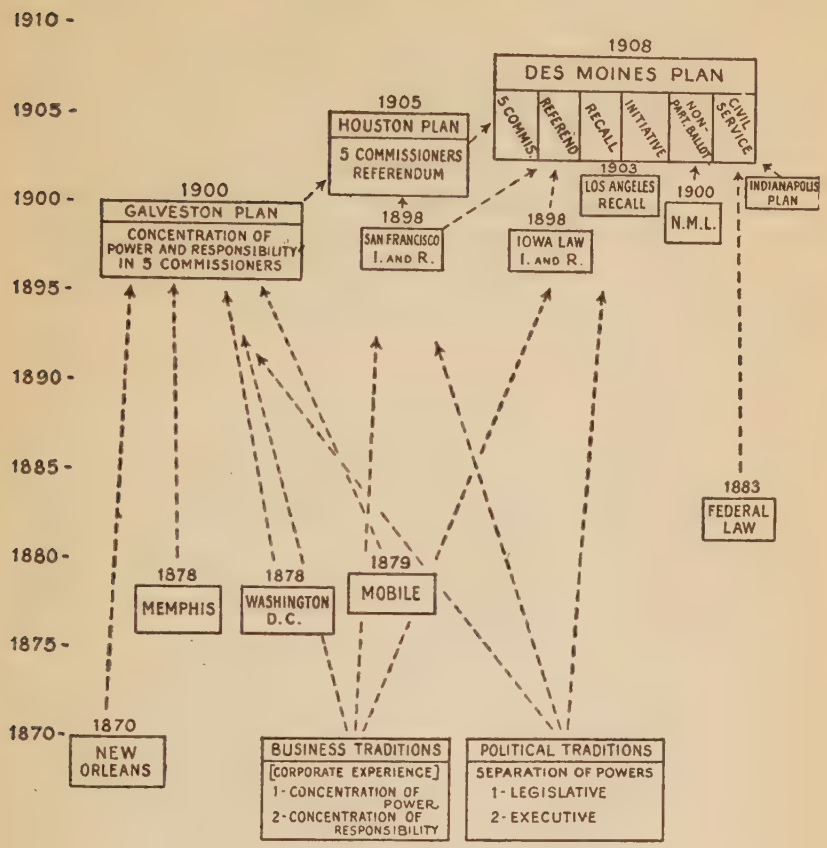


FIGURE 32

Invention of the Commission Plan of City Government Showing the Integration of a New Pattern of Political Structure

right possessed by Iowa cities since 1898); the non-partisan ballot suggested by the earlier experience of Massachusetts where in 1888 party designations were dropped (also Bos-

ton charter of 1909);[8] and finally, a civil service commission (the Federal law was passed in 1883). The new pattern was thus made up of political practices already known and tried out. The attribute of "newness" consisted, therefore, as in the case of other inventions, only in the fact that the Des Moines plan represented a combination of political traits (culture traits) never before made. The cultural threshold for the new political integration was ripe, and popular dissatisfaction with the conventional bi-cameral system was crystallized by glowing reports of new experiments in Galveston and Indianapolis. Figure 32 illustrates the principle of integration of known elements as well as the part played by a maturing cultural threshold of political elements essential to the creation of the new pattern of municipal government.

3. The City Manager Plan

In 1908 the city officials of Staunton, Va., hired Mr. C. E. Ashburner as a "general manager." They were disgusted with the inefficiency of the existing system and passed an ordinance giving the city manager all administrative power and responsibility. The plan worked, and in the fall of 1910 Lockport, N. Y., prepared a plan combining the commission form with the Staunton idea of a city manager. The next experiment was at Sumter, S. C., where in 1912 a new charter was adopted which embodied the Lockport idea. In Dayton, Ohio, after the usual expensive experience with wasteful political administration of the older type, the need for a new government became acute after the disastrous flood of 1913, and in 1914 a new charter was adopted which embodied the city manager plan. From this date on

[8] Munro, W. B., *The Government of American Cities*, New York, 1912, p. 144.

the idea spread rapidly to other American cities, large and small.[9]

In the city manager plan, which really represents a sort of a variation of the commission form,[10] we find that the agent most likely to precipitate a change from the old type of government is dissatisfaction with the conventional bicameral system, either because of the inefficiency and wastefulness of its operation, or because of this factor in combination with a crisis which crystallizes sentiment and forces a change. This is the same situation out of which the commission plan usually developed.

4. The Social Principles of Invention

The illustrations given have perhaps been sufficient to indicate in vague outline the principles that underlie the process of invention. It is now our task to attempt to trace more definitely the operation of these principles and to formulate more precisely a definition of the process of invention.

Approaching the practical problem first, it would be interesting and valuable to know whether we can predict an invention from a study of the elements that stand at different stages of their development upon the present cultural threshold. If we could do this we might be more optimistic about the future, and might be able to discover ways of controlling the course of social events. Since prediction and control are the two chief interests of applied

[9] Beman, L. T., *Current Problems in Municipal Government*, New York, 1923, pp. 451–452.

[10] According to Reed "It is fair to say that the manager plan is an outgrowth of commission government," p. 219 of his *Municipal Government in the United States*. 1926; see also, Woodruff, C. R., "The City Manager Plan," *American Journal of Sociology*, vol. 33, no. 4, Jan. 1928, pp. 599–615; Day, W. F., "Twenty Years of Council-Manager Government in Staunton," *Public Management*, vol. 10, no. 2, Feb. 1928, pp. 61–66.

science, our problem becomes one of considerable social significance.

Let us approach this problem by considering examples of the principle drawn from the applications of physical science. One of the most inspiring achievements of pure science was the discovery of the planet Neptune in 1846. The efforts leading up to this discovery are intensely interesting. Perturbations of planetary motion can be computed when the initial motions are given. Also if the perturbations are furnished by data of observation, then the nature of the forces that produce them can be inferred. It was by this procedure that Neptune was discovered. To be more specific, Herschel had computed the position of Uranus in 1781. In order to predict its position it was necessary to compute the perturbations due to all known bodies. This was done in 1820 by Bouvard on the basis of the mathematical theory of Laplace. But in 1820 certain discordances between theory and observation were also discovered. In 1845 Adams and Leverrier independently took up the problem and computed the position of a hypothetical and invisible planet. In 1846 the predicted planet was found within one-half a degree of its computed position. This was all the more marvelous since Neptune is four thousand million miles from the earth and its light takes four hours to come to us. Here we have a most convincing example of scientific prediction. Knowing what we do now, it would have been possible in 1845, with Adams' and Leverrier's mathematical computations at hand, to have predicted the discovery of Neptune as soon as the technique of astronomical observation had advanced another step.

From the field of chemistry come very striking examples of predicting discovery. In 1871, Mendeleff predicted the properties of elements and their compounds in his periodic table of elements still in use. More specifically, he predicted an element called Eka-silicon in 1871. Winkler discovered this element in 1886 (called Germanium), with an atomic

weight of 72.5 (predicted 72), and a density of 5.7 (predicted 5.5).

In 1920 the United States Bureau of Standards reported finding 135 faint lines in the infra-red portion of the spectra of pure oxides of the elements 60 and 62. A search was immediately begun to discover element 61, the existence of which was predicted by this research. In 1925 Dr. B. S. Hopkins of the University of Illinois discovered element 61, which was named Illinium. The prediction of rayon, artificial silk, is also interesting. In 1754 Reamur noted the exudations from silk worms which produce silk and attributed them to the cellulose material in the mulberry leaf upon which the worm fed. In 1855 Chardonnet, when working with Pasteur upon the diseases of the silk worm, made a similar observation. This led to experimentation and the production of artificial silk from cellulose, although natural silk is a protein. Thus we find in chemistry another illustration of the power to predict scientific discovery in consideration of the existing stage of development of the science. Other examples from the field of chemistry could be given, but let us consider an illustration from the field of bacteriology and medicine.

Modern preventive medicine is in the position of being able to control the spread of smallpox and rabies without having discovered the specific micro-organism which is the cause of either disease.

"Long before Pasteur's day, Jenner noticed that there occurred upon the hands and arms of persons engaged in milking cows small sores which, when healed, left permanent scars, and found that these people were rarely attacked by smallpox and that the disease was practically never fatal in marked contrast to the terrible ravages of the disease of that day.

"From this observation he inferred that the disease of cattle and the disease of man bore some relation to each other, and he proceeded to inoculate man with cow-pox and thereby produced immunity. Since that time the method has of course been extended by immunizing cattle and obtaining a vaccine in this way. The

organism causing the disease has never been found and we are in the extraordinary position of being able practically to protect mankind absolutely against a disease though entirely ignorant of the precise nature of the cause.

"The case of Pasteur's development of a protective vaccine against rabies involved the same principle though a somewhat different application. The characteristic symptoms of rabies are violent excitement obviously of central nervous origin, accompanied with marked increase of salivation and foaming at the mouth.

"Pasteur was able to produce rabies in animals by the use of saliva from rabid dogs but the period of incubation was quite uncertain, the disease did not always result, and appeared sometimes in very mild form. He drew the conclusion that the headquarters, so to speak, of the disease must lie in the central nervous system and he therefore took portions of the brain and cord, ground them up with a little sterile water and succeeded in showing that the disease could be always produced by the use of this emulsion, particularly when taken from the substance of the medulla. Neither he nor anybody else had ever succeeded in isolating the organism.

"Years after Pasteur the so-called nigri bodies, small black particles found in the medulla, were described. They are clearly not bacteria but apparently the results of bacterial action. They are of immense diagnostic value in settling the presence of rabies in suspected animals. This was, as you say, a process of indirect deduction in which he made up his mind that the headquarters of the difficulty must lie in a certain section and succeeded experimentally by using the products of this action in producing the disease."[11]

This illustration of scientific discovery is important for our analysis on two counts: first, it shows the possibility of control of a certain natural phenomenon without knowing the specific cause; second, judging from the progress of preventive medicine and bacteriology in discovering or isolating specific causes in other fields, we may confidently predict that it will be only a matter of time before some scientist has isolated the specific micro-organisms responsible for smallpox and for rabies. Our present knowledge of

[11] Quoted from statements in a letter written by Dr. Hugh Cabot to the author, Dec. 26, 1922.

the rate at which laboratory techniques in bacteriology are developing as well as our knowledge of the progress of scientific discovery in this field, justifies such a prediction.

In the preceding paragraphs we have introduced the word discovery and used it in connection with invention. For the sake of clarity of thought let us attempt to distinguish the somewhat different meanings of the two terms, and let us make this distinction in consideration of the phenomena we are studying, rather than in terms of etymology. The two terms, invention and discovery, are used synonymously by many people because each process results in adding something new to the store of culture prevailing in the group. The two processes are, as a matter of fact, similar more in their end results than in their actual functioning.

Discovery is the finding and description of a reality or a uniformity of natural phenomena not before perceived by man. Illustrations are: the geographic discovery of a new continent, discovery of a new species of insect, of a new star, of a new chemical element. We do not say that any of these things are invented. When we consider such things as formulations of laws of natural relationship like Boyle's law, Gresham's law, Mendel's law, the germ theory of disease, or a new mathematical expression of a principle of logic like the correlation formula, we customarily use the word discovery, although sometimes the term invention is used in these connections.

Invention differs from discovery in that it does not find that which already exists in a natural state. It differs chiefly from discovery in that it involves the fabrication of a new cultural pattern or a new configuration of culture traits already known. In short, invention combines known and familiar culture traits or habit patterns of thought into a new pattern, a pattern that never before existed, or could exist prior to the attainment of a certain stage of development of each of the culture traits of which the pattern is

composed. Illustrations are: the essentials of the automobile combined into one motive vehicle for the first time (a liquid gas-engine, a liquid gas receptacle, driving gears, clutch, power shaft, and carriage body); the Des Moines plan of commission government combined for the first time with a governing body of five commissioners, the referendum, the initiative, the recall, the non-partisan ballot, and a civil service commission. In the case of an invention it is not difficult to see that the new pattern consists of a combination of culture traits already known. Even in the case of discovery, however, we find that existing culture plays its rôle. America could not have been discovered by Columbus unless the art of ship-building had attained a stage of development which made trans-oceanic trips possible. Moreover, the discovery of America was due to the theory that the earth was round. Similarly, the discovery of a new species of insect depends upon the development of entomology to a point at which new and significant distinctions of structure can be noted.

This distinction between discovery and invention is made chiefly to clarify the concept of invention by means of analysis and example, rather than to argue that the two processes are important to separate for practical reasons. Except for accidental discovery, which should not be confused with invention, the two processes invention and discovery are alike in that the fundamental element in each is the inner or mental pattern consisting of imagery that has developed in a social environment of traditional associations (hence the cultural influence). It is particularly true of invention that this inner pattern gets embodied outwardly in a fabrication of material substance (automobile, telescope, and typewriter). In the case of social inventions, the outer structure embodying the pattern is not so tangible, although it consists of such elements as (1) reciprocating attitudes (of coöperation, loyalty, and devotion), (2) symbolic culture traits (as the flag, the idol, and the trade-

mark), (3) utilitarian culture traits (as buildings, and public works), and (4) oral or written language describing the inter-relations of these three elements (as charters, treaties, sacred books, and franchises); as we have shown in an earlier chapter.[12] But this concept of the structure of social institutions in which inventions have been made will be clarified in our subsequent discussion, although we cannot elaborate it at this point.

Our treatment of the principles of invention thus far has concerned itself with invention in the fields of physical science where illustrations have been drawn from the field of scientific discovery. Let us now turn our attention to an example of mechanical invention which is more than a case of predicting an invention in consideration of the prevailing cultural threshold, one in which a specific invention was desired and experts were assembled to produce the invention on schedule. It is a case of a mechanical invention made to order. We refer to the remarkable case of the invention of the Liberty Motor.

The pressure of war necessity demanded radical improvement in aëroplane motors. Mr. McAdoo, Secretary of the Treasury of the United States, was directed by President Wilson to procure the invention of a new motor. Mr. McAdoo thereupon selected two eminent consulting engineers and gave them a free hand. These men selected three experts: one on carburetors, one on gases, and the third on machine design. The experts were informed of the problem and the requirements of the new motor which was to be invented. "The weight of the new motor was not to exceed 1½ or 1¾ lbs. per h.p. This specification was to obtain even if the motor were fed with very low-grade gasoline. The parts of the motor were to be standardized and made interchangeable, so that the motor could be disassembled and reassembled under the most adverse conditions, and broken or otherwise disabled parts could be easily replaced. The

[12] Chapter II.

standardization of the parts of the motor was required as a condition for economical mass production.'' [13]

With the specifications before them, the three experts retired to a room in a Washington hotel where they remained until they had completed every detail of the designs for the new motor. During this interval they were undisturbed and even their meals were sent in to them, although for the mechanical requirements of the task a staff of trained designers was accessible to them. With designs completed, the parts were made by several different machine-manufacturing concerns, and were assembled at Washington. The motor worked from the start, although subjected to very exacting tests, and met all requirements. Only certain parts required minor modification from the theoretical specifications, due to inevitable stresses and strains of practical tests. When tools had been constructed for the manufacture of the motors, quantity production was begun.

These illustrations of our ability to predict discovery and invention are all taken from the fields of physical science and mechanics. Can we predict social inventions? Given a certain amount of banking experience and a developed technique of accounting and actuarial science, can we predict the invention of a new type of insurance policy? Given experience with the short ballot, the direct primary and the initiative, can we predict the invention of a new political device to eliminate political waste? Given experience in the administration of poor relief, experiments in social insurance, and employment exchanges, can we predict a new integration of government machinery to give more adequate control of poverty? Our answer must at the present time be ''no.'' But why this difference? Why can we predict scientific discovery in certain fields? It is beside the mark

[13] Goldenweiser, A. A., *Early Civilization*, New York, 1922, p. 163. Reprinted by and with permission of and special arrangement with Alfred A. Knopf, Inc., authorized publishers.

to answer that the social sciences are unscientific when the techniques of historical criticism and statistical analysis have attained their present states of precision. The answer seems to lie in other limitations.

In the first place Bernard has noted that the progress of invention in all fields of mechanical contrivance passes from an early "empirical" or wasteful overt trial and error stage, to a subsequent "projected" stage, in which discovery and invention are less a matter of lucky accident, and more the utilization of the method of science.[14] It follows that before the latter stage can be reached, the sciences fundamental to invention in the field under consideration must attain a stage of development at which certain basic principles or laws of relationship have been discovered and formulated. Thus are scientific discovery and practical invention intimately related. It will now be evident why inventions in the field of applied chemistry, in preventive medicine and in mechanics, can be predicted; and why inventions in the fields of government, industrial relations and community organization cannot be predicted; for invention in the physical field has attained the horizon of projected invention, whereas in the social field invention has hardly passed the empirical horizon. Figure 33 illustrates this principle of the empirical and projected horizons of culture in relation to the process of invention.

It will be observed that at this point we have introduced another term, the "cultural horizon." This is a convenient concept to use by way of expressing the idea that the process of invention is a function of the stage of development of the sciences which deal with the natural principles governing the phenomena under consideration, and fundamental to the integration of any new cultural pattern or invention in the field considered. As we have already used the term "cultural threshold" quite frequently it is worth

[14] "Invention and Social Progress," *American Journal of Sociology*, vol. 29, no. 1, July, 1923, pp. 1–33.

remarking that the concept underlying the two terms is the same, except that we are using the term cultural threshold in a more specific sense, as relating to a definite invention, whereas the term cultural horizon is used in a wider sense to describe general stages of scientific and hence cultural development.

In an earlier chapter we have discussed the principle of the cultural lag.[15] It is evident from the foregoing para-

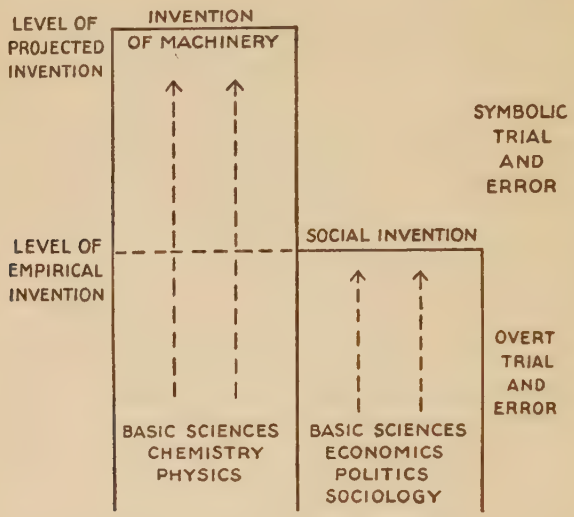


FIGURE 33

Cultural Horizons of the Empirical and Projected Stages of Invention

graphs that the phenomenon of the cultural lag is exhibited also in connection with the cultural horizon inasmuch as social science lags behind physical science in precision of measurement and accuracy of prediction. In our discussion of the cultural threshold the phenomenon of the cultural lag was found again. In short, the very fact that we can predict that a certain scientific discovery will be made in an immediate future testifies to the fact that certain techniques or phases of the science concerned are in a stage of

[15] Chapter X.

development at which we have confident expectations that before long they will "catch up" with the development of other phases or techniques, though for the time being they lag behind these other phases. Thus the principles of the cultural horizon and the cultural threshold are intimately related to the principle of the cultural lag. The underlying phenomenon is the same in each case—cultural change at different rates of development.

With the concrete illustrations of the preceding paragraphs in mind, we may now pass to a more intensive analysis of social or cultural inventions. It is evident that the new pattern of known or old culture traits does not integrate until a favorable cultural threshold has been reached. The process will be clearer if we consider more carefully just what we mean by integration and a favorable cultural threshold.

The term integration has been frequently used in these pages. It may be well to offer a definition since the concept is of utmost importance in our analysis. For purposes of our study we may follow Markey,[16] and note that there are three aspects to the concept of integration: (1) a dynamic or change aspect, involved in the coming together or emergence of a new or different organization, coördination or configuration of elements; (2) the continuity or causal aspect, in that the emergence is from or out of previously existing correlations and processes and is dependent upon these; and (3) the unitary aspect, that is, the emergent or configuration constitutes a sort of functional unit or working whole. It will now be evident why we have stated that an invention is an integration of known or old culture elements into a new pattern. In this connection it should be noted that we are confining our study to fundamental inventions of a relatively complex type, since the principle of integration is most clearly seen in such cases. In the fol-

[16] *The Symbolic Process and its Integration in Children*, a Ph.D. thesis in sociology, University of Minn. Ch. 9, 1927.

lowing chapter other aspects of the difference between fundamental and supplemental inventions will be discussed.

To consider the concept of the favorable cultural threshold, it may be noted at once that the cultural threshold is merely a term to describe a stage of development of several independent but related culture traits which may be combined into a new pattern, given a precipitating or initiating factor such as a felt need or a crisis.[17] Our illustrations of political invention have shown the operation both of the factor of crisis (flood, epidemic) and of felt need (widespread and intense dissatisfaction with existing order). Our reference to the presence of a "precipitating factor" raises the question whether necessity is not always "the mother of invention." Certainly there have been cases in which a crisis or an acute need gave rise to the integration or invention of a new cultural pattern. On the other hand, Ogburn[18] has emphasized the principle that existing culture, rather than necessity, is the true mother of invention. The point of the matter is really a difference in emphasis. Our analysis has shown the tremendously important rôle played by existing culture; to recognize the rôle of a "precipitating factor" is merely to focus attention upon the point in time at which the new pattern suddenly crystallizes, and does not in any sense underrate the fundamental rôle of existing culture in bringing about an invention. But consideration of the "precipitating factor" does raise a point not before discussed in this chapter, namely, the rôle of the original and gifted mind in producing the invention. Our failure to mention this factor before has not been due to underestimating its importance. Certainly all would admit that invention is impossible without the gifted mind which integrates the mental pattern of the new culture trait. Our purpose has been to stress the less tangible and often

[17] W. I. Thomas has developed the idea in his *Source Book for Social Origins*, pp. 13–26.

[18] *Op. cit.*

neglected factor of the cultural threshold. However, from this point on we cannot advance without giving attention to the factor of individual difference, the rôle of the original and gifted mind. Time and space permit only a brief reference to this factor, so that we shall merely cite the results of a study by Hart [19] in which he analyzed the biographies of 171 inventors. The results show that the motive of first importance was joy of manipulating materials, of experimentation and exploration (sixty-six individuals); only of second importance was perception of a need to be met or of a problem to be solved; and financial return seems to have been of relatively minor importance. It is also interesting that sixty per cent of these inventors were familiar with the field in which they invented; twenty per cent were professional inventors, and twenty per cent were outsiders or amateurs in the field. These results confirm our emphasis on the importance of the culture base from which the invention springs, but show also that the "precipitating factor" plays a part in the process.

The question may now be asked, What social factors (we have just cited the factor of individual difference) facilitate a new combination of traits?

The answer seems to be that the rate of development of the different (but complementary) essential elements depends upon the level attained by the trial and error process. Now it may seem inconsistent to mention the trial and error process as a social process when psychologists have shown the rôle played by trial and error in individual learning. This use is justified, we believe, inasmuch as psychologists recognize two somewhat contrasting levels of trial and error: first, trial and error on the overt level; and second, trial and error on the thought level, or the symbolic level. In the latter, language symbols are substituted for absent objects and for overt behavior. The thinking organ-

[19] "Preliminary Conclusions from a Study of Inventors," *Publications of the American Sociological Society*, vol. 21, 1927, pp. 191–194.

ism remains passive and summons up before his mind the images of things not present and arranges them in various orders and combinations. Thus is thought substituted for action. But it is perfectly evident that without accurate images of the objects not present and without language symbols to substitute for acts and objects, thinking in the human sense at least would be impossible. We have already seen [20] that language is a social product and hence trial and error on the thought level, that is, symbolic behavior, is also a social process because it uses mechanisms evolved out of generations of overt trial and error. Now to return to our problem, it should be evident that in physical science trial and error is more largely on the thought or symbolic level than in the social sciences. The highly developed technical vocabularies of physical sciences, the accurate formulation of laws of physical phenomena, the techniques of laboratory experimentation, all constitute a content to scientific tradition which permits trial and error on the thought level and avoids the necessity of much overt trial and error with its inevitable waste of energy and materials.

If the foregoing analysis is correct, then we may expect that the cultural threshold is favorable to a new invention when it is low, that is to say, when the different elements essential to the new combination have developed at such rates as to reduce to a minimum the cultural lags between them, and all enter a zone of potential integration (see Figure 34). Such a situation results when the separate lines of evolution of each essential element have proceeded by symbolic trial and error, or by overt trial and error, but not when both symbolic and overt trial and error occur in the separate lines of evolution of the different elements essential to the same new pattern. The corollary to this statement is, the cultural threshold is unfavorable to a new invention when it is high, that is to say, when the different elements essential to the same new combination are develop-

[20] Chapter II.

ing at different rates and exhibit marked cultural lags among them. This is usually the case when one essential element evolves by overt trial and error, while another evolves by symbolic trial and error.

Obviously, one of the reasons for the inability of social scientists to predict inventions in social relations is the

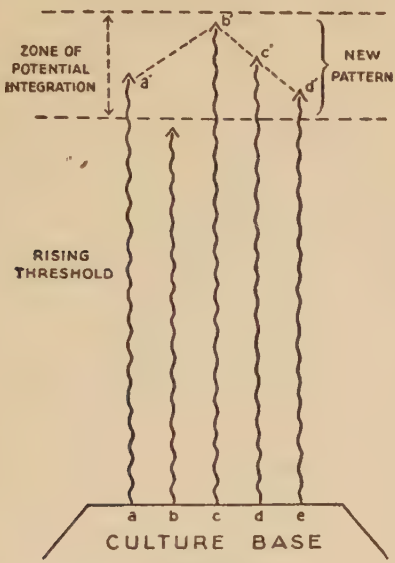


FIGURE 34

Cultural Threshold Showing Cultural Lags and Zone of Potential Integration

fact that the literature and traditions (external storage) of social science are as yet young and undeveloped, and hence fail to supply the accurate terminology, the formulation of laws of social relationship, and the perfected techniques of research, upon which symbolic trial and error must rest. As a consequence we clumsily try out new arrangements of government and social relations with little foreknowledge as to the outcome. Thus arises the discrepancy between social theory and social practice. But this

is a problem of major importance reserved for treatment in a later chapter [21] on the rôle of selection and scientific method in the growth of social institutions. It now becomes important to consider how inventions cause culture to accumulate and social institutions to grow and elaborate.

[21] Chapter XIII.

CHAPTER XII

THE GROWTH OF SOCIAL INSTITUTIONS BY THE ACCUMULATION OF CULTURE TRAITS

CULTURE, with its component social institutions, grows and elaborates for several reasons. In the first place old cultural forms persist through inertia and even resist the entrance of new traits from the outside. In the second place new culture traits are added by invention from within the culture area, and by diffusion from points outside the culture area. Discussion of the process of diffusion in relation to culture areas has received consideration in many books;[1] our present concern is with the growth of culture from the source of invention of new culture traits.

1. Additions to Culture by Invention

Fundamental, or major, inventions, add to the prevailing store of culture and sometimes change the whole trend of a civilization. This has been true of mechanical inventions applied to the problems of transportation and communication. Our contemporary Western civilization is a culture of industrial capitalism resting on centralization of control and mobility of parts, and in each case machinery has been an important factor.

In the sphere of social relations we have had many fundamental inventions. Considering only the examples analyzed in the preceding chapter, commission government and the

[1] See chs. vii to ix of Wissler's *Man and Culture* and bibliographies at ends of these chapters; Dixon, Roland B., *The Building of Culture*, New York, 1928.

city manager plan, we may say that the commission plan is a fundamental political invention in that it changed the structure of government in hundreds of American cities. By contrast, the non-partisan ballot, the initiative, the referendum and the recall, as parts of the Des Moines plan of commission government, are what we might term supplemental inventions. They have elaborated and made more complex the original five commission pattern of municipal government as it was invented in Galveston in 1901.

Now it is evident from these illustrations that the original pattern of a fundamental invention undergoes change as new elements are added to it. But since we have no method of recording supplemental social inventions, it is not easy to measure the change in the original pattern. Returning again to the field of mechanical or implement invention we find the case quite different. The United States and other sovereign bodies maintain patent offices wherein are kept working models and records of every practicable invention, whether of the fundamental or supplemental type. By consulting the files of the patent office, we may secure data which show how an original fundamental invention changes its pattern in course of time by the addition of minor inventive changes, in the nature of supplemental inventions.

In the following table [2] are shown the number of patents issued in connection with the plow sulky between the years 1865 and 1923. To the original pattern of the plow sulky, new and minor inventions were added as accretions. So far as the effects of these different supplemental inventions are concerned it would be interesting to ascertain how far each modified the function of the original vehicle in practice. No doubt some exerted but a minor influence, and although patented were rarely if ever used.

[2] For these data I am indebted to Dr. Simon Kuznets' *Secular Movements*. He has similar data for the typewriter, sewing machine, electric motor, the electric meter and the internal combustion engine.

TABLE III

NUMBER OF PATENTS ISSUED FOR THE PLOW SULKY

Years	*Number*	*Cumulative frequency*
1855–59	35	35
1870–74	29	64
1875–79	131	195
1880–84	164	359
1885–89	80	439
1890–94	44	483
1895–99	16	499
1900–04	16	515
1905–09	15	530
1910–14	11	541
1915–19	5	546
1920–23	3	549

In Figure 35 we have plotted the data of Table III. It is more evident from the graph than from the table, that the growth of this particular mechanical implement, the plow sulky, has gone through a cycle. From 1865 to 1884 there was a yearly increase in the total number of new inventions on the plow sulky. From 1884 to 1923 there was a steady decline in the yearly number of new inventions added to the original fundamental invention. The curve representing this cycle we shall call a frequency cycle curve. It pictures quite graphically the life cycle through which this fundamental invention has passed. Another way of representing the same thing is to plot the cumulative frequencies of the table. When this is done we have a curve showing changes in the rate of growth of the fundamental invention during its life cycle. It will be observed that at the outset its growth is slow, then about 1875 it takes a spurt upward, until about 1890 when it begins to taper off again. Thus the frequency cycle curve and the cumulative frequency curve together describe in graphic fashion the phenomena of growth and life cycle of this invention.

Before passing on to a similar analysis of social inventions, it should be noted that in our graphs we have added together as if they were identical or equal units all of the supplementary inventions on the plow sulky of a given five-year period. This procedure is justifiable on the assump-

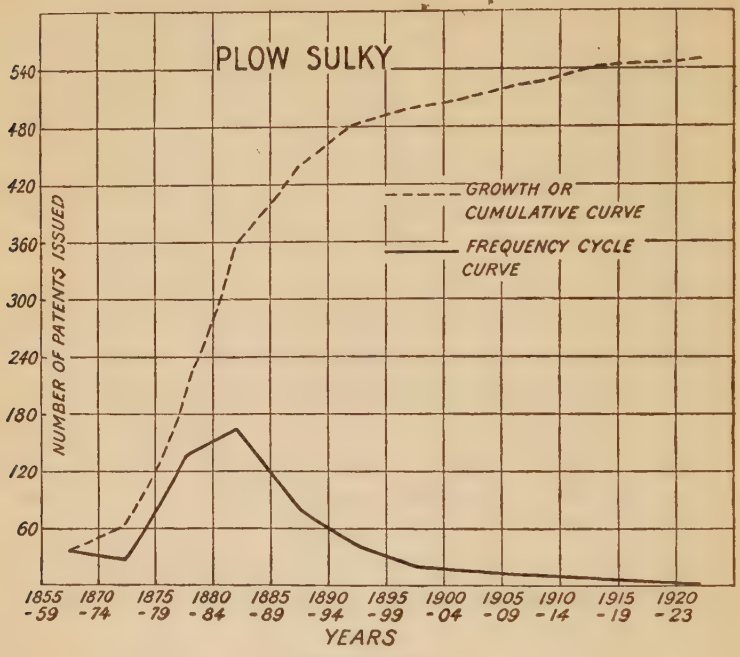


FIGURE 35

Graph of Growth of Plow Sulky, Showing Growth Curve and Frequency Cycle Curve

tion that the units are equal. This we do not know. They may not represent equal increments of growth. The error is, however, somewhat mitigated, though by no means eliminated, by the fact that there were a large number of inventions concerned, 549 in all. Furthermore, our reference to the life cycle of the original fundamental invention is also not strictly accurate because we do not know into what other forms and to what other uses the plow sulky has been trans-

muted during the years of its decline. The patent records do not tell us this. There is also the question of substitution of the motor tractor or some other device. These qualifications are introduced in order to avoid generalizations that are misleading and to indicate the need of caution in the interpretation of such phenomena until further research has uncovered the facts.

2. The Growth of Social Institutions

Upson[3] prepared in 1922 a very interesting chart of the growth of the varied activities and functions of the city of Detroit since its reorganization in 1824. (See Table 4.) In preparing this chart, Dr. Upson was careful to add as new elements to institutional structure, only cases of new functions or new administrative units. He tried to eliminate as additional elements all cases of an old function being discharged under a new name, or cases involving mere rearrangements. This precaution helped to avoid adding mere verbal units which were mistaken for actual functional or structural units. The curve of growth based upon Upson's data is shown in Figure 36.

Anderson,[4] in commenting on Upson's study says, "We must ask the question whether the increase is real or only apparent. A close examination of the list of functions printed by the Detroit bureau quickly proves that the increase is partly real and partly only apparent.

"The merely apparent increases fall under two distinct heads. First are numerous cases of specialization and internal reorganization for the better handling of the public business. In 1912 a civil service commission was set up to centralize and improve the selection of city employees. In 1919 the office of purchasing agent was created to handle the

[3] *The Growth of a City*, Detroit Bureau of Government Research, 1922.

[4] *American City Government*, Henry Holt & Co., New York, 1925, pp. 401–405.

purchasing of public supplies. In each case the function in question had actually been performed previously by the city, but performed with less uniformity and skill. These

TABLE IV

THE GROWTH OF GOVERNMENT IN DETROIT *

Years	*Number of functions or activities added*	*Cumulative frequency*
1824–31	12	12
1832–39	5	17
1840–47	1	18
1848–55	2	20
1856–63	3	23
1864–71	9	32
1872–79	4	36
1880–87	16	52
1888–95	24	76
1896–03	15	91
1904–11	37	128
1912–19	51	179
1920–21	5	184

* From "The Growth of a City," *Bureau of Governmental Research, Inc.*, Detroit, Michigan, June, 1922.

cases illustrate the specialization and redivision of labor which are constantly taking place in government. . . .

"A second group of apparent increases consists of those in which the city itself begins to do what it had formerly let out to contractors and private business concerns."

These comments of Dr. Anderson are certainly important but they do not alter the essential fact that the changes noted by Dr. Upson involved increases in the complexity of the structure and the function of the city government, and as such may be considered real elaborations of and accretions to a definite political institution. Consequently the

graph does depict the growth of social structure by the addition of new culture traits. Some of these were invented elsewhere and borrowed by Detroit. Others had a local origin. In any event the structure of the institution grew.

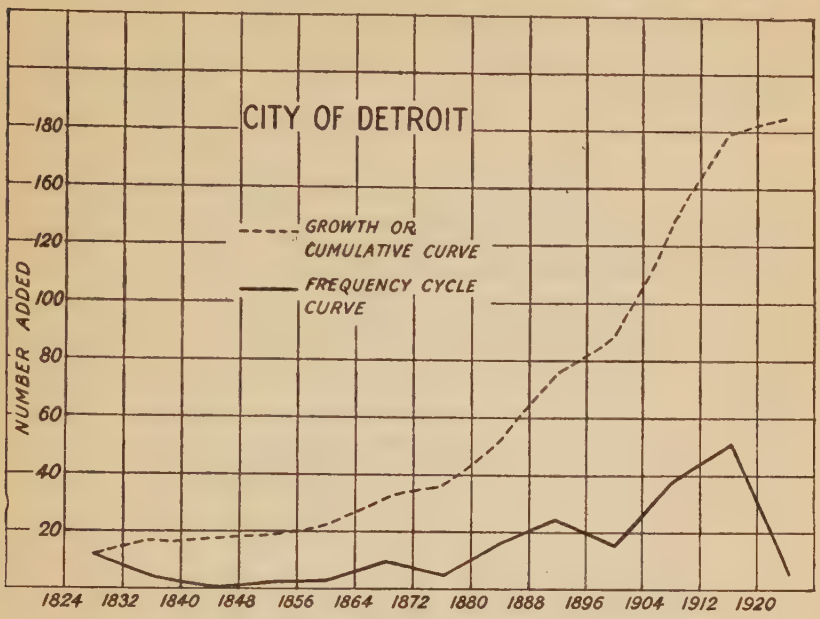


FIGURE 36

Graph of Growth of Structure of City Government of Detroit, Showing Growth Curve and Frequency Cycle Curve

It will be observed that the first forty years, from 1824 to 1865, were years of a uniformly slow rate of growth. Then came an upward spurt which has continued throughout the remaining period. We cannot tell whether or not the growth curve of the political institution will follow the contour of the growth curve of an invention like the plow sulky (Figure 35), and in time reach the end of a period of rapid growth, then, passing the point of inflection, tail off and complete its cycle. If our perspective were over a very long period, hundreds of years, this might be the case.

When interpreting the growth curve of the inventions on the plow sulky certain questions were raised about the validity of adding up the different inventions of a given interval of time. The same question applies to our analysis of the growth of a political institution. We must squarely face the assumptions underlying the additive procedure of treating different increments to institutional structure in a plus-plus relation. Theoretically and in conformity with strict logical procedure, we should add together only those things which are units of the same kind. Valid numerical procedure requires that the additive process be applied to units that are at least relatively homogeneous. In the case under analysis we have added together such varied functions and administrative units as: garbage collection, zoo, band concerts, wire inspector, forestry, ferries, continuation schools, and so on. At the present crude stage of measurement of institutional growth all that can be said in extenuation of the additive procedure is that: first, if the total number of cases of things added together is relatively large, and second, if the total is broken up into sub-groups of relatively homogeneous units which are found to follow the same law of growth, then there is a probability that our errors will balance one another and that the final gross picture is relatively correct in its main outlines.

When we apply these tests to our immediate problem, we find that 184 different functions and administrative units are involved between the years 1824 and 1921. Considering the sub-groups of functions and administrative units under such headings as police, education, health, and public works, we find that each sub-group, taken by itself, follows the first phase of a growth curve similar to the growth curve of all items added together. Table V presents the data.[5] The extent to which these tests justify the procedure

[5] *Ibid.*

TABLE V

ANALYSIS OF STRUCTURE OF CITY GOVERNMENT OF DETROIT BY HOMOGENEOUS SUB-GROUPS OF FUNCTIONS AND ADMINISTRATIVE UNITS *

Years	*Police*		*Education*		*Health*		*Public Works*	
	Fre.	*Cum. f.*	*Fre.*	*Cum. f.*	*Fre.*	*Cum. f.*	*Fre..*	*Cum. f.*
1824	1	1	1	1			1	1
1825–60	2	3	3	4			5	6
1861–80	6	9	5	9	1	1	7	13
1881–00	8	17	17	26	10	11	12	17
1901–21	19	36	44	70	24	36	23	48

* Anderson, *op. cit.*

we have followed cannot be determined in any final sense at this time. We believe, however, that the tests are met to an extent which justifies tentative inferences of sufficient strength to serve as practical working hypotheses for further research.

Table VI and Figure 37 present similar data drawn from an analysis of the functions and administrative units of the state government of Minnesota for the period 1858 to 1923.[6]

TABLE VI

GROWTH OF STATE GOVERNMENT OF MINNESOTA *

Years	*Number of functions or activities added*	*Cumulative frequency*
1858–63	13	13
1864–71	6	19
1872–79	5	24
1880–87	12	36
1888–95	5	41
1896–03	8	49
1904–11	14	63
1912–19	9	72

* From "Administration of the State of Minnesota," *Municipal Reference Bureau,* University of Minnesota, June, 1924.

6 Lambie, M. B., *Administration of the State of Minnesota,* 1924, p. 6. Table pg. 363a.

In this case we have a political institution of a more extensive type although the period is shorter. In this case two sets of curves are shown. In the one the gross total increments and the corresponding frequency cycle curve are

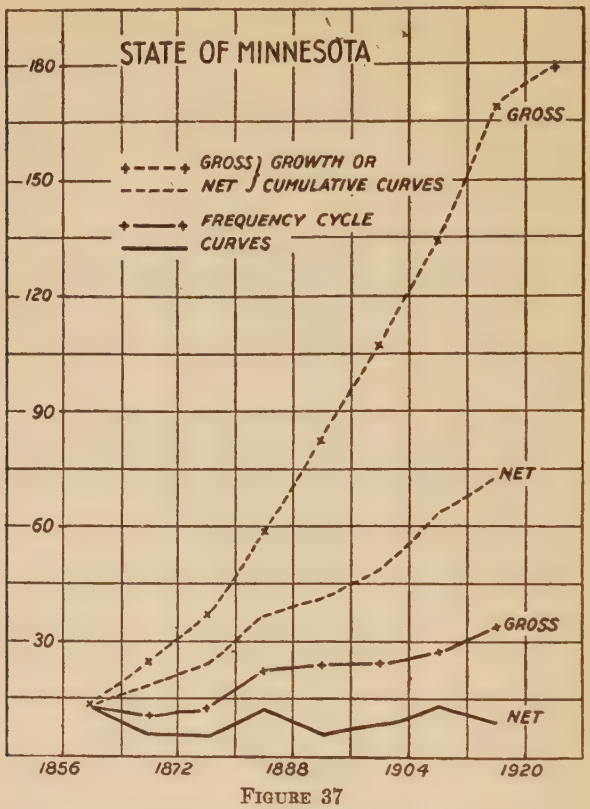


FIGURE 37

Graph of Growth of Structure of State Government of Minnesota, Showing Growth Curves and Frequency Cycle Curves.

plotted. In the other a curve of total additions corrected quite radically for cases of change of name without change of function, and transfers of function is shown. It is natural that the gross total curve shows the greater rate of growth.

Table VII

Table of Data of Growth of Political Structure (City of Detroit and State of Minnesota) Gross Cumulative Frequencies

Year	Government activity Detroit	Minnesota	Year	Government activity Detroit	Minnesota
1835	13		1892	61	
1836	16		1893	65	78
1842	17		1894	67	
1850	19		1895	72	83
1858	20	14	1896	74	
1861	21		1897	75	91
1864	22		1898	76	
1865	24		1899	80	95
1866		15	1900	81	
1867	25	18	1901		99
1868	26	19	1902	83	
1869		20	1903	85	107
1870	28	22	1904	89	
1871	30	25	1905	94	113
1872	31	26	1906	96	
1873	32	28	1907	98	120
1874	33	30	1908	101	123
1875	34	32	1909	107	126
1876		33	1910	113	134
1878	35	36	1911	117	
1879		37	1912	126	
1881	39	38	1913	130	140
1882	41		1914	132	
1883	44	41	1915	143	145
1885	47	51	1916	147	
1886		53	1917	152	155
1887	51	58	1918	157	
1888	53		1919	162	168
1889	55	62	1920	176	
1890		64	1921	183	176
1891	58	73	1922		186

The corrected growth curve for the state of Minnesota is less like the growth curve of the city of Detroit than is the uncorrected growth curve for Minnesota. We have probably somewhat over-corrected, and the true growth curve may lie between the two that are plotted. In any event our

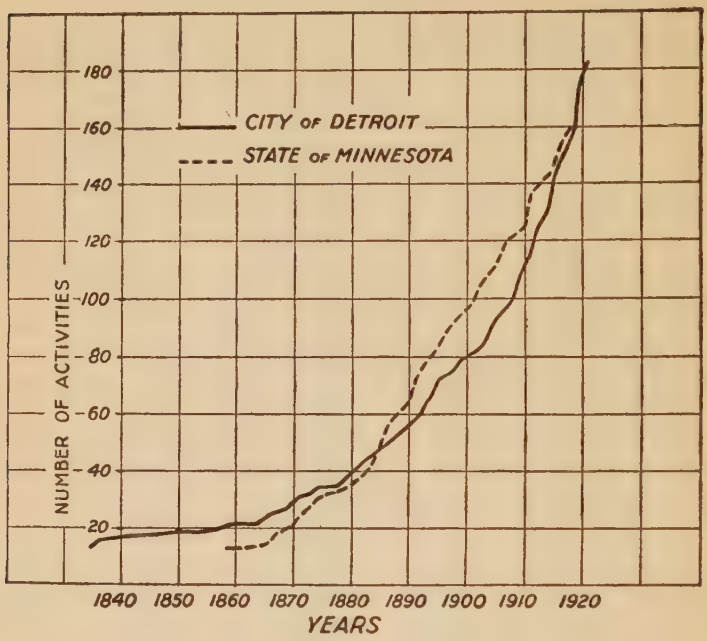


FIGURE 38

The Growth of Political Structure (City of Detroit and State of Minnesota) Based on Gross Cumulative Frequencies of Table VII

(See also Fig. 13)

analysis of the changes in function and structure of the state government of Minnesota shows that a growth curve seems to describe the phenomenon as in the case of the city of Detroit.

3. The Growth of the Commission Form of Government and the City Manager Plan

Table VIII and Figure 39 show the frequency cycle curve and the growth curve for the commission form of government. It is interesting to note that this pattern of political structure has passed through a cycle of growth, equilibrium and decline during the years from its invention in 1900 to

Table VIII

Number of Cities Adopting Commission Form of Government *

Year	*Number of additional cities or towns adopting*	*Cumulative frequency*	*Number abandoning*	*Net cumulative frequency*
1901	1	1		
1902		1		
1903		1		
1904		1		
1905	1	2		
1906		2		
1907	6	8		
1908	3	11		
1909	15	26		
1910	29	55		
1911	50			105
1912	32	137	1	136
1913	53	189	1	187
1914	17	206	1	203
1915	14	220	6	211
1916	13	233	2	222
1917	13	246	6	229
1918	9	255	3	235
1919	7	262	5	237
1920	4	266	8	233
1921	9	275	19	223
1922	6	281	7	222
1923	2	283	10	214

* From Berman, L. T., *Current Problems in Municipal Government,* 1923, pp. 518–526.

1925.[7] From 1900 to 1911 there was an increasing number of cities adopting commission government by ordinance and charter. From 1911 to 1913 the situation remained in equilibrium. From 1914 to 1925 there was a decline in the number of cities adopting commission government. When the

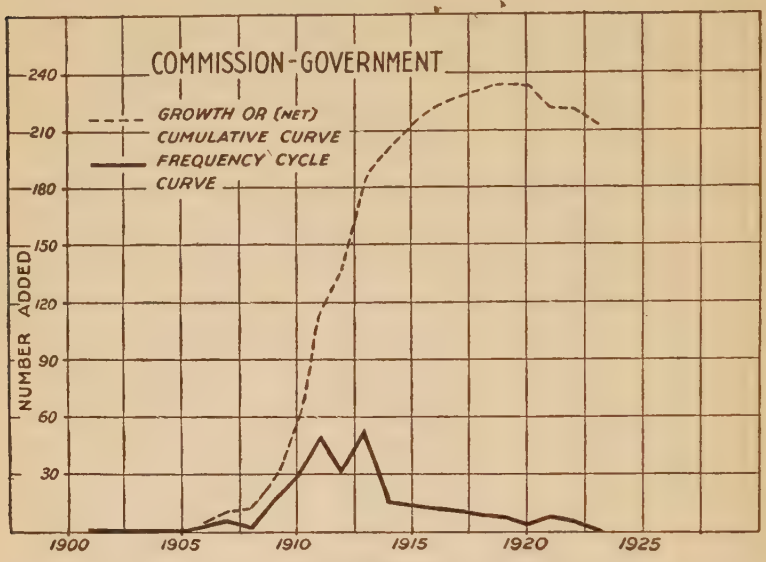


FIGURE 39

Graph of Growth of Commission Form of City Government, Showing Growth Curve and Frequency Cycle Curve

cumulative frequences are plotted we have a smooth growth curve, with points of inflection about 1910 and 1914.

Table IX and Figure 40 show the frequency cycle curve and the growth curve for the city manager plan of government. Here again we note the same tendency for the pattern of political structure to pass through a cycle of growth, equilibrium and decline during the years following its invention in 1908 to 1928 (estimated). Similarly the growth curve of this form of city government shows two points of inflection. The city manager plan appears to have been an

[7] Berman, *op. cit.*, pp. 518–526.

outgrowth of the commission form and was invented during the first phase of the growth of the commission form. That is to say, the city manager plan was invented about four years before the commission plan reached its saturation point.

TABLE IX

NUMBER OF CITIES ADOPTING CITY MANAGER PLAN *

Year	*Number of additional cities or towns adopting*	*Cumulative frequency*	*Number abandoning*	*Net cumulative frequency*
1908	1	1		
1909		1		
1910		1		
1911		1		
1912	3			4
1913	8	12	6	6
1914	9	21	8	7
1915	22	43	13	16
1916	16	59	15	17
1917	16	75	16	17
1918	27	102	18	26
1919	30	132	13	43
1920	33	165	14	62
1921	53	217	12	102
1922	34	251	9	127
1923	35	286	3	159
1924	19	305		178
1925	25	330		203
1926	18	348		221
1927	4	352		225

* From *Public Management,* vol. 9, no. 3, March, 1927, p. 283.

Although the frequency cycle curves and the growth curves of these two political inventions are strikingly similar to the case of the plow sulky, a mechanical invention, still the comparison is not exact. It should be noted that in the case of the plow sulky we dealt with supplemental inventions added to the pattern of the original invention.

Similarly, in the case of our analysis of the city government of Detroit and the state government of Minnesota, we were dealing with supplemental inventions or increments added to an original pattern. In our data on the commis-

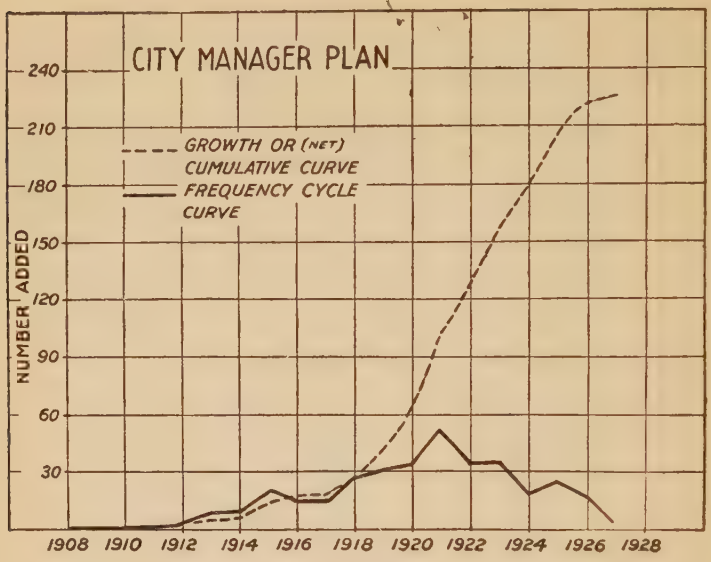


FIGURE 40

Graph of Growth of City Manager Plan, Showing Growth Curve and Frequency Cycle Curve

sion form of government and the city manager plan, however, the increments added are not supplemental inventions encrusting themselves upon an original structure or pattern, but additions to the number of cities adopting the same pattern of government. These data are, therefore, population data. That is to say, the units we are dealing with here are towns and cities. Consequently we must squarely face two difficulties of interpretation: first, the fact that the cities adopting the particular pattern of a

political institution are units spread over a wide territory and not additions piling up upon an original pattern; and second, the question whether the wide differences between the populations of the small towns and the large cities which adopt the form of government invalidate the procedure of adding them together as units.

The work of Pearl [8] in attempting to measure, describe and predict by means of a growth curve such varied populations as the body weight of a male white rat (continued multiplication of body cells), increase in weight of a pumpkin, regeneration of a tadpole's tail (after being cut off), increase in yeast cells, Drosophila in a bottle, and the human populations of France, Sweden, and the United States, provides such a wide range of analogies that the bearing of his studies requires consideration here. Our growth curves of Detroit and Minnesota involve questions of units of an integrating structure like the questions of units of a living organism concerned in Pearl's growth curves of body weight of a male white rat and the weight of a pumpkin. Our growth curves of the commission form and the city manager plan involve questions of units of numbers of towns like the questions of units of population increase concerned in Pearl's growth curves of populations of Drosophila, yeast, and Sweden.

Returning to the two questions raised in the preceding paragraph and keeping in mind Pearl's procedure, we may say that our growth curves of the commission plan and the city manager plan represent graphically the growth of these new patterns of local political institutions in terms of units of increase analogous to Pearl's population growth curves for certain political areas rather than for certain structurally limited organisms (the case of the white rat and the pumpkin). Our curves in Figures 39 and 40, represent, therefore, growth of a population of new political units. If we had for each case of a town adopting the com-

[8] *Biology of Population Growth*, pp. 7–15, 34–35, 113.

mission plan as detailed information as we presented for Des Moines, it would be possible to ascertain the extent to which the spread of the new pattern of political structure was accompanied by increments to the pattern. We were able to do this in our comparison of Galveston, Houston and Des Moines. If this should be done for all of the 288 cities noted, and the pattern of commission government be found to increase in complexity as units of time passed, then we could prepare a growth curve showing the increasing complexity of structure, which would be the same sort of phenomenon as the growth curves of the plow sulky, the city of Detroit, the state of Minnesota, the body weight of a male white rat, and the weight of a pumpkin. But since we are limited in our commission form and city manager plan data to the principle of growth as shown by the number of new units of the same pattern appearing in a limited area, we may supplement Figure 39 by calling attention to the map of the United States in Figure 41. Here we have plotted by intervals of six years the spread of the commission plan from Galveston in 1900, over the area of the United States. It is interesting to note that the year of greatest numerical gain in cities adopting the plan (1913), is also the year of greatest geographic spread of the new institution. More precisely, in 1913 the periphery of the wave of diffusion seems to have been reached. Six years later, in 1919, the arc of diffusion had contracted. Thus our three graphic methods of description, the frequency cycle curve, the growth curve, and the plot of diffusion, merely express in quantitative form the conclusion to which political scientists have come into respect to these new political institutions, namely, that they have both passed the crest of their popularity and are on the wane.

Statistics showing the number of cities which have abandoned the two plans are also given in the fourth column of Tables VIII and IX. In each case it will be observed that the experience of abandonment goes through a cycle.

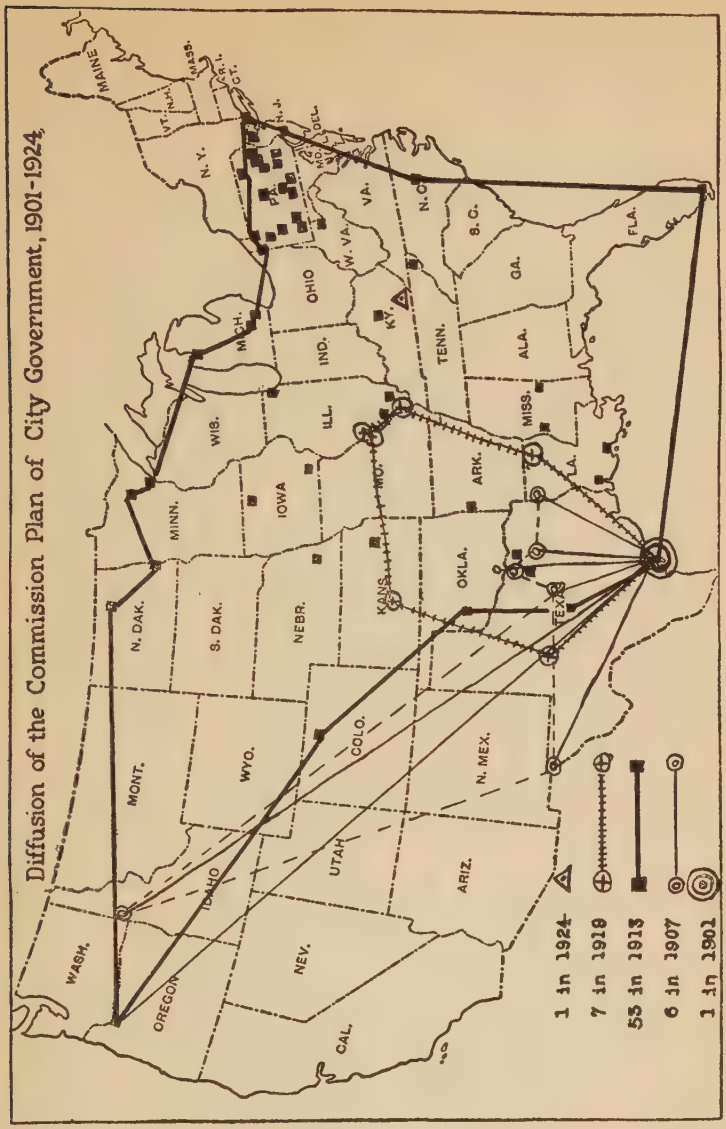


FIGURE 41

Map of United States Showing Diffusion of Commission Plan of City Government, 1901–1924

We have thus far presented our quantitative data and raised certain fundamental questions regarding concepts and the validity of units, but we have not attempted any general inferences. It now becomes important to consider our tentative and fragmentary results to discover whether they conform to any principle.

4. Problems in the Measurement of Institutional Growth

In the chapter on invention we raised the question whether it is possible in the present stage of development of social science to predict forthcoming discoveries and inventions. Our answer to this question was a negative one. The data just reviewed do not constitute sufficient evidence to change this temporary opinion. But there is another sense in which our data relate to the question of prediction.

Can we predict the course of institutional growth from the cumulative frequency curve of increase? Can we predict the life cycle of a culture complex such as a social institution? To answer these questions affirmatively requires more research than is represented in this brief study. Superficially, it may appear from Figures 36 and 37 that we can predict the growth and life cycle of a political institution. But our quantitative analysis has not disposed of certain difficult problems connected with the homogeneity of the units involved. These problems can only be solved by many studies similar to the present one. If independent verification of our results comes from such future studies, then the trends and laws of growth suggested by this study may be found to be universal principles. Even with our limited data, it is interesting to note that the phenomena of growth of political structure is quite similar to the phenomena of growth of organic (cellular) structure. Pearl, encouraged by the similarity in the results of his studies upon very different organic structures, has fitted curves to his data and attempted to predict future populations. Without

committing ourselves to the problem of predicting future growth, let us consider the possibility of fitting mathematical curves to our data, merely as a device of more concise description of the phenomena.

If we take the simplest growth curve among our illustrations, namely, the growth of structure in the state government of Minnesota, we may fit a simple parabolic equation $y = 13 + 7x + \frac{2}{9}x^2$, to the data of Table V by the method of selected points.[9] This curve is a very close fit for an approximation (see Figure 42). When we attempt to fit a parabolic function to the Detroit data, we find the problem not so simple. In this case the curve cannot be described accurately by a single parabola. Two parabolic equations are required. For the period 1824 to 1876, the parabola $y = 12 + 1.55x + 0.37x^2$ is a fair fit. But the rest of the curve follows a different function. The period 1876 to 1916 is better described by the parabolic equation,

$$y = 36 + 14.27x + 2.865x^2.$$

This situation suggests the need of a different type of exponential curve to fit the growth data of these social institutions. Biologists and economists have already experimented with more complex functions,[10] such as: the Gompertz curve,

$$y = ab^{c^x}$$

and the Pearl-Reed curve,

$$y = d + \frac{b}{e^{ax} + c}$$

These curves have been found to fit the phenomena of growth more closely than the simpler parabolic functions described above. Moreover these more complex exponential curves enable the student to predict future populations and future increments of growth. The subject is one of great

[9] Mills, F. C., *Statistical Method*, 1924, pp. 296–300.

[10] Prescott, R. B., "Law of Growth in Forecasting Demand," *Jour. Amer. Statistical Association*, vol. 18, no. 140, pp. 471–479, Dec. 1922; Davies, G. R., "The Growth Curve," *Ibid.*, vol. 22, no. 159, pp. 370–375, Sept. 1927.

interest and involves the valuable scientific concepts of acceleration and momentum, concepts which require more advanced treatment than can be accorded them in an elementary work of this kind.

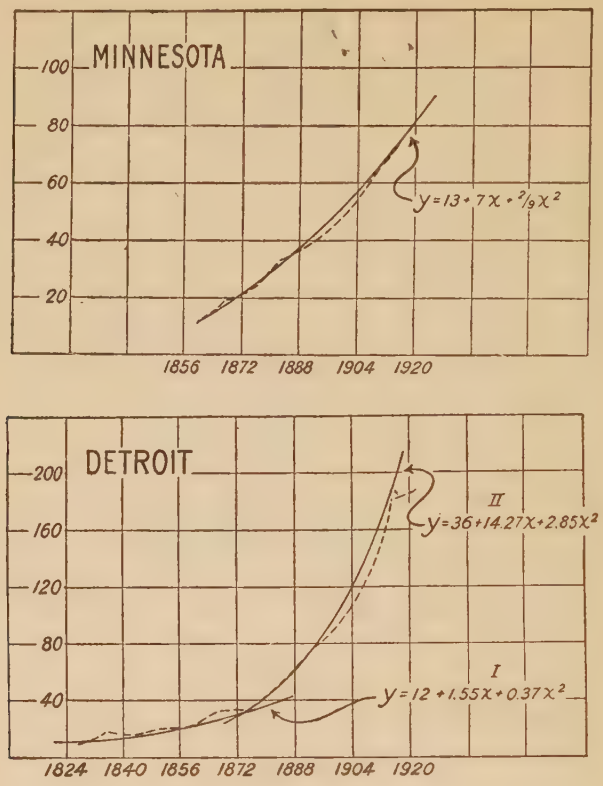


FIGURE 42

Parabolic Equations Fitted to Net Growth Curves of State Government of Minnesota and City Government of Detroit

Before concluding this account of the growth of social institutions by the accumulation of culture traits, there are two additional points that require treatment: first, the psychological aspect of institutional structure; second, the

functional or dynamic aspect of institutional growth, psychologically considered.

Our earlier analysis [11] of social institutions developed four criteria of structure: (1) common reciprocating attitudes (in the case of political institutions these would include loyalty, coöperativeness, domination, and subordination); (2) symbolic cultural objects or traits (state seal, emblem, and flag); (3) utilitarian cultural objects or traits (public buildings and their equipment, and public works); and (4) oral or written language describing and specifying the inter-relations of the first three factors (charter, ordinance, and constitution). It is clear that these structural phases of the political institution supply the basis for an attempt to define the units of structure that added to the original pattern give rise to the phenomenon of growth.

In the city of Detroit, growth in structure of its government includes such items as milk inspector, electrical inspector, plumbing inspector, plumber's examination, harbor police, which are practical devices to insure and regulate common reciprocating attitudes of helpfulness, and cooperation. Such items as police signals, art museum, and band concerts are culture traits of symbolic value to which behavior is conditioned. Such items as public baths, teachers college, periodical library, water meters, and playgrounds are culture traits of utilitarian value having to do chiefly with creature wants. And finally, such items as reference library, vital statistics, criminal identification, and research engineer are provisions for the description and specification in written language of the inter-relations among the first three factors.

The charter of Des Moines [12] embodies an account of the inter-relations of common reciprocating attitudes of individuals (sections relating to merit system, initiative, and recall), with symbolic culture traits (sections dealing with

[11] Chapter II.
[12] Bradford, *op. cit.*, pp. 312–338.

rights of people), and with utilitarian culture traits (salaries of officials, contracts, and franchises).

It is at once evident that when we analyze political institutions in terms of these psycho-cultural categories, certain questions about units which bothered us before are seen in a clearer light. Considering the growth in complexity of pattern of the original institution by the addition of new functions and administrative units (cases of city of Detroit and state of Minnesota), the phenomenon is of a super-organic character and certainly not adequately represented by the additive or plus plus conception. More precisely, the new function or administrative unit (using unit in the sense of a board or official), is woven into the texture of the pattern of the whole structure. Thus the playground, by providing supervised use of children's leisure time, probably diminishes the pressure on the police system ordinarily occasioned by increase in juvenile delinquency. Plumbers' examinations guarantee the city safer plumbing and perhaps reduce the pressure on the officials of the board of health in times of epidemic. Electrical inspectors help diminish fire hazard and indirectly affect the functioning of the fire department. New traits added thus spread across and through the structure in the process of functioning. The concept of homogeneous units, equal and interchangeable, is thus seen to be over-mechanical and unsuited to the analysis of such a psycho-cultural organism as a political institution.

These remarks, justified we believe by the psycho-cultural analysis of the institution, indicate that the difficulty of heterogeneity of the units added together in our growth curves is partly more apparent than real. If, however, our additive procedure is to be criticized because we have added together units not of the same denomination (hence heterogeneous), when the assumption that makes addition valid is the condition that the units be equal, then we dispose of this difficulty in part as soon as we recognize that the things

added are not thought of as units but are considered extensions and elaborations of functions already potential in the expanding structure. It will be noted that our claim is merely that the problem of heterogeneity of units is but "partly" solved by these considerations. Analogy to growth in a living organism like a male white rat helps clarify the subject, since the different organs of the rat's body are composed of different types of cells which grow at different rates, nevertheless the organic unity that is the rat's body expands and elaborates (or grows), in accordance with the growth curve. Similarly the unity that is a political institution expands and elaborates (at different rates among its different parts) but shows in the total picture a growth curve.

The implications of this analysis for the problem of heterogeneity of units due to the differing sizes of the towns that adopted the commission form and the city manager plan should be noted. Here the problem is somwhat different from that touched on in the preceding paragraph. In this case we are dealing with additions to the population (numbers) of towns using the particular institutional pattern. These towns differ in the number of their inhabitants from small towns to large cities. To a considerable extent the actual and functional complexity of structure of city government increases with the number of inhabitants, so that we should expect to find more elaborate government functions and structures in the larger cities. But the essential pattern is the same in all cases: that is to say we are counting and adding to the total each year towns that have adopted the new pattern (of commission form or city manager plan), as a substitute for some old form. We hazard the surmise that the patterns of government among towns (whatever their size) which have the new form are more alike than among a group composed of some with the new form and some with older forms. In short the basic similarity of pattern, whatever the size of the town,

seems to justify the additive procedure followed in our analysis, although we recognize that further work must be done before the final validity of the procedure is established.

The functional or dynamic aspect of the growth of an original invention (whether it be a mechanical pattern or an institutional pattern) by increments of supplemental inventions or culture traits may perhaps be explained in this way. To the original fundamental invention (as the plow sulky, automobile, commission government) the attention of many persons with original minds is attracted. The result is that many efforts are made to improve upon the original pattern. These efforts bring about an increasing flood of supplemental inventions and modifications in the fundamental pattern. In the case of the plow sulky our statistical table shows this conclusively. But since the fundamental invention was designed to serve a specific function, it is clear that in time the original pattern will by increment and modification attain a point of relatively perfect adaptation in meeting the situation for which it was designed. Thereafter the number of increments or supplemental inventions will diminish. Consequently the frequency cycle curves describe the process. Evidently there are a limited number of supplemental inventions possible before adjustment is attained or the original pattern is so thoroughly modified as to transcend its original purpose and hence become transformed into something which serves a different function.

Our final problem is the functional or dynamic aspect of institutional growth psychologically considered. Here it is necessary to reconsider the principle of the societal reaction pattern treated in an earlier chapter.[13] To repeat, we found that a formally constituted group, like a law-making body, tends to react to a new situation in terms of a dynamic pattern of reaction that passes through three phases.

[13] Chapter VIII.

Phase one is the enforcing of the mores of the time. When enforcement of out of date laws inevitably breaks down, the group resorts to the second phase of the societal reaction pattern. This second phase is an era of special legislation. Legislative and administrative experiments of all sorts are tired out until the riot of experimentation produces a chaotic situation. Then the group shifts to the third phase of

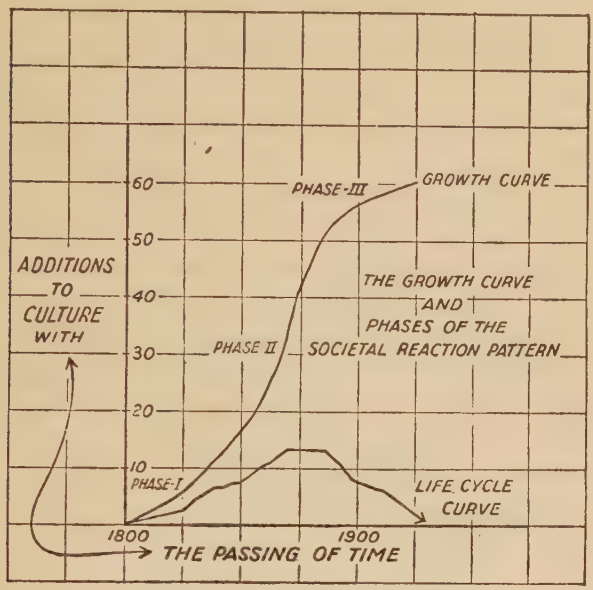


FIGURE 43

The Growth Curve of Institutional Structure Explained by the Hypothesis of the Societal Reaction Pattern

the reaction pattern, namely, the passing of general legislation, consolidating administrative functions, and basing practice on general principles rather than on particular expedients. As soon as we consider this principle of the societal reaction pattern in connection with the growth curve of an institution, certain correspondences immediately suggest themselves.

First, the period of slow growth in the growth curve cor-

responds to the first phase of the societal reaction pattern at which mores are enforced and few innovations (additions) allowed or attempted. The middle period of the growth curve, when rapid increases in the complexity of the structure are observed, corresponds to the second phase of the societal reaction pattern in which special legislation is the order of the day. It is in this period of the institutional cycle that growth is most rapid because the law-making body is experimenting with all sorts of expedients.[14] Finally the third period of diminished growth corresponds to the third phase of the societal reaction pattern in which general laws are passed and the structure consolidated and simplified. At this time the varied experiments are sifted and the real contributions are integrated into a new pattern of institutional structure. This configuration persists until some change in other social institutions produces a condition of strain throughout the whole cultural civilization and another era of special legislation sets in. What apparently happens is that, soon after the general law and the reorganization of structure are effected, it ceases to be new, sinks to the level of conventional mores, gets out of touch with new inventions, exhibits a cultural lag, and so requires readjustment. Thus the cycle begins all over again and the three phases of the societal reaction repeat themselves. Viewed from this point the growth of institutions is not steady, but occurs in waves or pulsations, according as the varied phases of the societal reaction pattern register their effects in social structure and culture traits.

[14] Anderson, W., "The Law of Special Legislation and Municipal Home Rule in Minnesota," *Minnesota Law Review*, vol. 7, 1923.

CHAPTER XIII

SELECTION AND SCIENCE

BEGINNING with pre-literate peoples and gaining headway with the invention of writing, culture has accumulated during the last five thousand years at an ever-accelerating rate. The invention of power machinery and the creation of an economic organization designed for quantity production have combined to facilitate the piling-up process of new traits of material culture. Human behavior conditioned to and habituated to these new culture traits has fallen into patterns which have become conventionalized into the varied configurations of non-material culture which characterize our contemporary civilization. And yet culture accretion has never been a wholly indiscriminate process. Ogburn [1] has rightly made the point that cultural accumulation is selective. Not every new trait invented finds a place for itself in the structure of culture. Some traits are rejected; some are dropped; some are transformed and combined with existing traits. Consequently our treatment of cultural change is not complete without an outline of the process of selective cultural accumulation.

Behind and underneath the external and obvious surface of cultural accumulation lie certain subtler psychological and cultural processes which require attention. We have already considered [2] at some length the process of invention by which new cultural traits are added. Elsewhere we have referred the reader to an analysis [3] of how new traits

[1] *Social Change*, New York, 1922.
[2] Chapter XI.
[3] Wissler, C., *Man and Culture*, especially chs. 7–10 and reference lists.

are added by the process of diffusion. It remains to consider briefly the factors that seem to lie back of the persistence of old cultural forms through inertia. Inasmuch as Ogburn has directed attention to this phenomenon [4] we shall merely touch on certain phases of the subject.

There appear to exist certain centers of resistance to cultural change. These focal points and processes function at once to perpetuate old forms as well as to select new forms. One center of resistance lies in the human individual. Existing neural patterns have predominance over newly formed ones. Explicit attitudes of opposition often exist and are aroused by the new.

Another center of resistance exists in the social process. Attitudes of reluctance, hostility, and fears of the new, become stereotyped and conventionalized by the process of interaction. Familiar forms become associated with personal security and group welfare or, stating the matter differently, behavior gets conditioned to established mores. Old forms are rationalized and emotional attitudes of self-justification become woven into the social pattern. The intrinsic nature of language itself still further complicates the process. Inasmuch as language symbols function as substitute stimuli, these symbols grow, elaborate and spread out by what often appears to be a process which has an independent existence and follows laws of its own. At any rate our present knowledge of the extremely subtle process of symbolic substitution,[5] although incomplete, is sufficiently discerning to indicate the existence of unfathomed depths.

Besides these individual and interactional centers or processes of resistance to the new there are such cultural factors as: the utility of old and established forms; the symbolic values of the culture traits incorporated in the existing structure; the predominance of the existing culture traits by virtue of mere numerical superiority; and

[4] *Op. cit.*, pt. III.
[5] Markey, *op. cit.*

the trend towards revaluation, or, to use Marett's [6] term, "transvaluation" of old forms; this sometimes takes the form of what he calls "metataxis," or survival of a culture form beyond the period of its greatest cultural significance.

Thus the ever-increasing pressure of new culture traits upon the existing field of culture continually creates the necessity for readjustment. This adjustment is effected both by accretion and by selection. We have already considered some aspects of the accretion process; let us now turn our attention to the process of selection. Viewed in the perspective of man's long history, the process of social and cultural selection appears to differ somewhat in the pre-literate and literate periods of his development. In pre-literate society the life of the human individual and his behavior patterns were not thought of as separable. Consequently selection tended to be crude. Undesirable behavior patterns were eliminated by killing off those who exhibited them. Culture traits to which these behavior patterns had been conditioned often got caught in the mechanism of social control and suffered elimination along with the innovator. Not until the social heritage could be stored objectively in language symbols was it possible for man to exercise a discriminating selection over his culture. We shall, therefore, consider the process of selection in the following pages.

1. Examples of Social and Societal Selection; Chiefly Drawn from Pre-literate Society [7]

The collective regulation of the individual extends to a greater range of thought and action in pre-literate society than with us. The struggle for existence is far more severe, for famine, pestilence, drought, wild beasts, and ferocious enemies are an ever-present menace. Moreover, men are so

[6] *Psychology and Folklore*, p. 109.

[7] "Primitive Social Ascendancy Viewed as an Agent of Selection in Society." By F. Stuart Chapin. Reprinted by kind permission from *Publications of the American Sociological Society*, Vol XII, 1917.

ignorant of the causes of these phenomena that they are loath to run the risk of new ways of meeting old needs when use and wont have demonstrated the security of established modes of action. Hence society cannot afford to take the risk of innovation, and the pressure of ancient belief, of immemorial custom, and of mechanical ceremony is harsh and arbitrary. Primitive social ascendancy is impatient of individual idiosyncrasy and manifests itself in those cruder forms of social control which coerce and constrain from without. The subtle and refined instruments of social order, such as enlightenment and personal ideals, are less important than tribal law, social custom, magical ceremony, and belief in the supernatural.

Mrs. Elsie Clews Parsons [8] has assembled some interesting material showing how belief in the supernatural is a very potent means of preserving the primitive social order. The "bogyman" who carries off naughty children, who eats and kills unmanageable juniors, is appealed to by primitive parents to keep the children where they belong and out of the way of adults. The owl will come and take away noisy children of the Thompson River, Kootenay, and Sioux Indians.[9] Kaffir children are threatened with the Nomgogwana monster.[10] The Gineet-Gineet of the Euahlayi tribe of New South Wales is alert to catch bad children in his net.[11]

In initiation ceremonies the social hold upon the novice is strengthened by taboo. Boys and girls of the Lower Murray tribes in Australia are told that to eat emu, wild duck, swans, geese, black duck, or the eggs of any of these birds will cause their hair to become prematurely gray and their muscles to shrink.[12] If a Urabunna initiate should allow a

[8] "Links between Religion and Morality in Early Culture," *Amer. Anthropol.*, XVII, No. 1, pp. 41–57.

[9] Teit, J., "The Thompson River Indians," *Mem. Amer. Mus. Nat. Hist*, II, 103.

[10] Kidd, D., *Savage Children* (London, 1906), pp. 96–97.

[11] Parker, K. L., *The Euahlayi Tribe* (London, 1905), p. 137.

[12] Beveridge, P., *Jour. and Proc. Roy. Soc., New So. Wales*, XVII (1883), 27.

woman to see one of the secret sticks, he and his mother and sisters would drop dead.[13]

Those who commit incest among the Omeo tribe of Victoria are beaten by the "jidjigongs" or snakes. Anyone who married into prohibited subclasses of the Queensland savages would die because his behavior was offensive to Kohin, an earth-roaming spirit of the Milky Way.[14] The islanders of the Malay Archipelago believe that sickness will follow the eating of stolen food from tabooed fields.[15] Batak thieves are cursed by the magic of the great priest of Baglige.[16] Iconoclasts among the Dakota, Ainu, and in the Malay Archipelago will be punished by supernatural powers.[17]

Australian blackfellows are educated from their infancy to believe that departure from the customs of the tribe will inevitably be followed by such evils as becoming prematurely gray, being afflicted with ophthalmia, skin eruptions, or sickness, and death from evil magic.[18] African Bakalai believe that if a man should eat his totem the women of his clan would miscarry and give birth to animals of the totem kind, or die of some awful disease.[19] If a man of the Elk clan of the Omahas ate of any part of the male elk, he would break out with boils and white spots on different parts of his body.[20] Among the Samoans the man who ate a turtle would grow very ill, and the turtle within him would say, "He ate me; I am killing him."[21] Members of

[13] Spencer, B., and Gillen, F. J., *The Northern Tribes of Central Australia* (London and New York, 1904), p. 498.

[14] Howitt, A. W., *The Natives of South-East Australia* (London and New York, 1904), p. 498.

[15] Bartels, M., *Die Medicin der Naturvölker* (Leipzig, 1893), p. 29.

[16] von Brenner, J., *Besuch bei den Kannibalen Sumatres* (Würzberg, 1894), p. 226.

[17] Eastman, M., *Dacotah* (New York, 1849), p. 87; Schoolcraft, H. R., *Indian Tribes*, II (Philadelphia, 1851–1857), 195–196; Bachelor, J., *The Ainu and Their Folk-lore* (London, 1901), pp. 58, 177–178.

[18] Curr, E. M., *The Australian Race*, I (1866), 52.

[19] Du Chailler, *Equatorial Africa*, p. 309.

[20] *Third Annual Report, Bureau of American Ethnology*, p. 225.

[21] Turner, *Samoa*, p. 50.

the secret society of the Hohewachi, fixing their minds on an offender against Omaha tribal custom, thrust him from all helpful relations with man and animals, so that he suffers misfortune or death.[22] And so it goes, belief in the supernatural being is invoked to terrify children into obedience to parents, adults into conformity to custom, and all offenders into submission to society. In this way a selected and approved conduct is obtained and the social order preserved without violence.

But since the punishments promised by belief are not always immediate and the social order must be preserved, the group supplements control by this means with rougher methods. Seri marriage customs are enforced on pain of ostracism and outlawry.[23] An Omaha brave, well on toward the high rank of chief, yielded to temptation and went upon an unauthorized war party without first performing the ceremonies that alone could give the enterprise the sanction of the tribe. Although he was successful, he was punished by debasement for breaking tribal custom.[24] Deliberate murder among the Omahas is punished by banishment for four years of solitary life outside the village, communicating with no one.[25]

A serious breach of tribal custom among the Wyandot is punished by outlawry declared after formal trial before the tribal council. Should the offender continue in the commission of the wrong act, it is lawful for any person to kill him on sight, and sometimes it becomes the duty of all men to kill him.[26] The Kamilaroi drive out of the company of his friends a man who persists in keeping as his wife a woman of a subclass with which his subclass must not marry. When this does not induce him to leave the woman, his male

[22] *Twenty-seventh Annual Report, Bureau of American Ethnology*, p. 497.
[23] *Seventeenth Annual Report, Bureau of American Ethnology*, p. 283.
[24] *Twenty-seventh Annual Report, Bureau of American Ethnology*, p. 405.
[25] *Ibid.*, p. 215.
[26] *First Annual Report, Bureau of American Ethnology*, pp. 67–68.

kindred follow him and kill him, and the female kindred kill her.[27]

One who makes light of the authority of the chiefs or of the sacred packs of the Omaha is considered a disturber of the peace, and by order of the tribe is killed by being wounded with the poisoned end of a staff.[28] Among the Tlingit, when a murderer is not high caste enough to make up for the dead man, a council of the people of the victim gather before the house of a man of equal caste and call him out to be killed.[29] A murderer or his nearest kin is killed by the Iowa.[30] The natives of Southeast Australia ordinarily kill young men who transgress the marriage class rules. The Karamundi and Barkinji kill men who break the totem marriage rules. The Yaitma-thang and Wolgal tribes usually punish infringements of this sort by death. Among the Tongarankas the whole tribe take a hand in the killing of an offender against marriage laws or class rules.[31]

Adultery is a particularly heinous offense against marriage customs, and among many primitive peoples is punished by death. It is regarded as a grave transgression because the wife is ordinarily considered to be the property of her husband.[32] In Melanesia adultery is regarded as an offense against society. The man who commits it is led before the chief, judged by the council of elders, and executed on the spot.[33] In Africa, at Bornon, the guilty ones are bound hand and foot, and their heads smashed by being struck together.[34] In Uganda King M'tesa caused adulterers

27 Howitt, *op. cit.*, p. 208.
28 *Twenty-seventh Annual Report, Bureau of American Ethnology*, p. 213.
29 *Twenty-sixth Annual Report, Bureau of American Ethnology*, p. 449.
30 *Fifteenth Annual Report, Bureau of American Ethnology*, p. 239.
31 Howitt, *op. cit.*, p. 332.
32 Letourneau, *The Evolution of Marriage and the Family* (London, 1904), pp. 208–227.
33 De Rochas, *Nouvelle Caledonia*, p. 262.
34 Denham and Clapperton, *Hist. univ. des Voy.*, T. XXVII, p. 437.

to be dismembered, having one limb at a time cut off and thrown to the vultures, who feasted on it before the eyes of the sufferers.[35] The reindeer Koriaks, of the Eskimo, kill at once a man and woman taken in adultery.[36] The Pipiles of Salvador punish the delinquents with death.[37] In Yucatan the guilty ones were stoned or pierced with arrows and impaled or disjointed.[38] Ancient Mexicans generally punished the offense with stoning.[39]

Several Australian tribes punish by death penalty those who reveal tribal secrets. The Gommera order the killing of any man who reveals the bull roarer to a woman, or any of the secrets of the Bunan or the Kuringal. The council of Headmen of the Kamilaroi tribes may decree the death of men whose conduct is irregular.[40] The Kamilaroi tribe of the Gwydii River kill a man who has spoken to or has had any communication with his wife's mother.[41] The Chepara kill men who become insane or have the habit of idiotically muttering to themselves because they are considered *Wulle*.[42]

Clearly some principle of interpreting this mass of selective phenomena is necessary to throw light upon the type of adaptation secured by social control. An examination of the treatment that sociologists have given to selection in society indicates a state of confusion upon this point. Natural selection is not always distinguished from social selection,[43] and the terms social selection and societal selection are used interchangeably to designate selective processes that secure quite different forms of adaptation. What some

[35] Speke, *Voyage to the Sources of the Nile*, p. 343.
[36] Démeunier, *Mœurs des différents peuples*, T. I[er], p. 219.
[37] Bancroft, *Native Races*, II, 675.
[38] *Ibid.*, p. 674.
[39] Prescott, *Hist. Conq. of Mexico*, I, 26.
[40] Howitt, *op. cit.*, p. 343.
[41] *Ibid.*, p. 208.
[42] Howitt, p. 354.
[43] Giddings, F. H., *Principles of Sociology* (New York, 1909), p. 326; and Ellwood, C. A., *Sociology in Its Psychological Aspects* (New York, 1915), p. 56.

writers call counterselection,[44] or misselection,[45] are really forms of social selection. While it is not wise to try to force formal logic on mobile life-processes which are in a state of flux and forming, it is at least worth the effort to make an attempt at consistent classification.

When a human being gets in the way of ponderous social institutions or customs with the momentum of antiquity, a social selection takes place; the unlucky individual may be crushed to physical extermination, or simply thrust out from ordinary social intercourse. In any event a social selection quite different from natural selection occurs, and in the long run the process seems to result in the survival of a race of tractable and conforming individuals.

Considering this phenomenon we find that sociologists have not always distinguished between selection that works on the physical plane and selection that works on the psychic plane. This distinction is very important, for selection on the physical plane involves the extermination of the individual and brings decisive results. The antisocial, the innovators, the non-conformists, and offenders are once for all eliminated. Selection on the psychic plane is milder. It merely modifies conduct and thought (behavior). It fails to strike through to racial stock and secure a physical basis for perpetuating its gains.

Let us examine this selective process that works on the physical plane. It manifests itself in various ways. Sometimes it involves the killing of helpless non-producers—the aged and the infants—as in parricide or infanticide. These victims of social power are not offenders against social usage; their only sin is that they stand in the way of group survival. In communities where these practices flourish the struggle for existence is severe and food is scarce, so that this established population policy of the

[44] Keller, A. G., *Societal Evolution* (New York, 1915), ch. vi.

[45] Ross, E. A., *Social Control* (New York, 1910), p. 424; and *Foundations of Sociology* (New York, 1905), pp. 328–330, 335–339.

group has received rough confirmation by natural selection working groupwise. In such a case the dominating mode of pluralistic behavior is one of formal like-mindedness. Sometimes the selective death-rate is more clearly seen, as when society deliberately destroys the offender against its ways. Again, the impulsive action of a mob crushes the life of an offender. Sometimes conventions of the leisure class and higher standards of comfort delay marriage among certain strains of the population so that they multiply more slowly than the squalid and reckless. Sometimes war reverses the process of survival of the physically fit, who, first chosen by strict military standards, are later slaughtered wholesale by machinery, like so much meat in a grinder, and the weak are left behind to perpetuate the race. Again, a formal and custom-bound religious system, intolerant of independent thought, ruthlessly tortures and kills the rationally intellectual. And thus the human variate is caught and crushed in social machinery that other men of other ages have by their collective behavior set in motion, and thus the innovator, the non-conformist, the offender, and, in fact, any who dare originate or advocate a new idea are executed, lynched, stoned, hanged, or burned, for the mills of society grind ruthlessly if not consistently fairly.

But selection in society is not always of the bloody type that kills, and it often fails to mold the race by establishing a selective birth-rate. Social selection takes place on the psychic plane also. Squatters upon the path of some social institution may be merely thrust aside, while the procession proceeds upon its ponderous way. Innovators and offenders against the customary are simply constrained or coerced into approved behavior. It is not always necessary to crush the delinquent lifeless in order that his antisocial act or new idea may be eliminated.

The manifestations of social selection upon the psychic plane are manifold. Sometimes the offender is separated

from the privileges of association with his fellows by expulsion from society. This process takes the social forms of ostracism and imprisonment, the political forms of banishment, exile, and outlawry, and the ecclesiastical forms of excommunication and interdict. In all these ways the harmful behavior pattern is got rid of by doing away temporarily or permanently with the individual who originates or practices it. Sometimes the method of physical chastisement and corporal punishment are used to coerce delinquents. Finally, direct selection of non-material culture traits may proceed with great deliberation, as in formal discussion by a legislative body of the merits of some resolution. Perhaps the highest type of this selective process is seen in those forms of popular legislation known as the initiative, the referendum, and the recall of elected officials, as well as in popular voting under universal suffrage.

Ross [46] in speaking of social selection and Keller [47] in describing the process of societal selection have called attention to the difference between selection that takes place upon the physical plane and that which takes place upon the psychic plane. Yet even these authors have left the matter somewhat indefinite. We therefore suggest the following distinctions in an endeavor to attain a sound basis for clear thinking about this important phenomenon of social life. The terminology has been worked out in consideration of the foregoing analysis, in the belief that it may help to correct a confusion in thought that is so clearly indicated by confusion in prevailing terminology.[48]

When the pressure of social ascendancy or the slow crowding of social conditions, customs, and conventions causes the death of any individual or the termination of his family line, the phenomenon is *social selection.* Now this

[46] *Social Control*, pp. 323, 437; *Foundations of Sociology*, pp. 343–348.

[47] *Societal Evolution*, pp. 71–72, 89.

[48] We proposed substantially this terminology for these types of social selection in an article, "The Experimental Method and Sociology," *Scientific Monthly*, February–March, 1917.

social selection not only takes the form of conscious group action to exterminate offenders or obnoxious persons, but there is also the blind and non-purposive crowding of technic conditions and social institutions which often establishes a selective death-rate or a selective birth-rate. Hence, borrowing a distinction from Keller,[49] we may say that social selection is sometimes rational and sometimes automatic. It is automatic whenever the victim has met his fate from standing in the way of slowly changing custom, or has dashed himself against the impenetrable surface of an ancient institution, or is killed by the impulsive action of a mob. In the latter case the dominating mode of pluralistic behavior is what Giddings calls sympathetic like-mindedness; in the former cases it is formal like-mindedness of the people that has set the conditioning limits of social selection. On the other hand, the process becomes rational whenever a non-conformist or an offender is exterminated by the deliberate, thought-out plan of action exemplified in execution that follows formal trial, or in capital punishment after criminal procedure. In all such cases the dominating mode of pluralistic behavior is rational like-mindedness. Now in these different forms of social selection it should always be remembered that the objectionable thing which is got rid of is, in general, the misfit behavior pattern or habit. The killing of its exponent or promoter is only incidental to the accomplishment of this conscious or dimly perceived end. Thus social selection works upon the raw materials of psychic stuff, although it acts upon a physical plane.

Turning now to that form of selection which works upon a psychic plane, attaining its results by the coercion and constraint of human variates, we would suggest the term *societal selection* for this process. Societal selection, therefore, is the phenomenon of the constraint or exclusion from the group of obstructionists, innovators, non-conformists,

[49] *Op. cit.*, chaps. iii, iv, and v.

or social offenders, or of the ejection from non-material culture of an objectionable practice. This process is sometimes automatic and sometimes rational. It is automatic when an offender is ostracized, as Maxim Gorki was shunned by the American public. It is rational when an objectionable person is deliberately excluded from the group for definite and well-understood reasons. Its political forms are seen in exile, banishment, and outlawry. Excommunication and interdict are its ecclesiastical forms. The distinctly social form of rational societal selection is imprisonment of delinquents and especially the individualization of punishment. Here again, as in social selection, the objectionable thing got rid of is, in general, the offensive behavior pattern, or habit, but in this case the end is accomplished by milder means. Not only is societal selection less harsh, it is also more direct. Misfit ideas are expelled from the social group in the act of formal voting by any deliberative body of human beings, whether at an election, in legislative assembly, or by the popular initiative, referendum, and the recall of elected officials.

Assuming for the moment that this proposed terminology corresponds to real and significant distinctions, and meets with approval, let us conclude with a brief examination of the types of adaptation attained by social as contrasted with societal selection. If we consider social adaptation as such a relationship between human individuals, social groups, or institutions as is favorable to existence and growth,[50] then analysis discloses the following facts.

Social selection working on the physical plane exterminates the antisocial and solves the problem of the social order so that it stays solved. It works on instinct and evolves a human type with inborn social tendencies. But the process is expensive. The criteria of social selection are often set by blind social conditions or accidentally and ignorantly attained. Unequable tax systems and impediments

[50] Bristol, L. M., *Social Adaptation* (Cambridge, 1915), p. 8.

upon the marriage of the intellectual discourage propagation of the best stock. The machinery of social selection is rude. As often as not the innocent man is lynched, and justice frequently miscarries. There is no racial gain from the vicarious death penalty. Among the Tlingit Indians when a murderer is not high caste enough to atone for the dead man, an innocent man of the same caste who belongs to the kin of the offender is killed.[51] Social selection is unduly harsh in case of minor offenses. The primitive man who revealed tribal secrets or married in violation of his class or totem rules was killed. Even in England it was not until 1832 that the death penalty for sheep, cattle, and horse stealing was abolished.[52] Finally social selection fails to recognize in certain types of psychic variation a higher social usefulness than is apparent on the surface, and so genius and original ability have been ruthlessly crushed out. Galton has shown how the Catholic church brutalized the breed of our forefathers by first condemning gentle natures to celibacy and then making "another sweep of her huge nets, this time fishing in stirring waters, to catch those who were the most fearless, truth-seeking, and intelligent in their modes of thought, and therefore the most suitable parents of a high civilization . . . put a strong check, if not a direct stop, to their progeny." [53]

Social selection is also slow in attaining its adaptation. It takes ages of bloodshed accompanied by sanguinary waste to secure the tame and tractable type. Moreover, when its work is done and the race has been purged of antisocial strains, it is adaptation to past conditions that is achieved. In the meantime a new social order has, like as not, arisen and sweeping changes in the criteria of selection have appeared. In short, "We must not," as Ross says, "overlook

[51] *Twenty-sixth Annual Report, Bureau of American Ethnology*, p. 449.

[52] Stephen, J. F., *History of the Criminal Law of England*, I (London, 1883), 474–475.

[53] *Hereditary Genius* (New York, 1892), pp. 343–344.

the fact that selection adapts men to yesterday's conditions, not to to-day's." [54] Humanitarians have always perceived the cruelty, inefficiency, and waste of social selection and have striven to hasten the evolutionary tendency away from social selection to a milder form of the weeding-out process. The historical trend toward gentler penalties for offensive conduct is known to all. Let us consider, therefore, the type of adaptation achieved by selection that works on the psychic plane.

Societal selection attains its adaptation by coercing and restraining the offender and modifies his behavior while living. It works on habit, weeding out the misfit act, and achieves a superficial surface adaptation that may not endure without the restraining pressure of social ascendancy. Spin loose the binding-screw of the social presses, custom and convention, and primitive human nature flares out in savage impulse. Robert Owen thought that he could establish an ideal community by doing away with the existing institutions of marriage, private property, and religion, yet the disastrous failure of this New Harmony experiment seemed to prove the instability of man's social nature without these balance wheels of social order.[55]

Adaptation attained by societal selection has the merit of being cheap. It is not wasteful of human life and spills no blood. Yet the conformity of the browbeaten innovator who secretly muses upon his grievance is far from wholesome. It is superficial adaptation often purchased at loss of self-respect. The wastes of societal selection are in no track of blood, but in a trial of broken spirits and festering hypocrisy. Happily the increasing rationalizing of societal selection has discovered a refined instrument of social order in the form of individualization of punishment. By this device the pressure of social ascendancy may be delicately

[54] *Social Control*, p. 9.

[55] Chapin, note 48 *ante;* also "Moral Progress," *Popular Science Monthly*, May, 1915.

adjusted, and conformity may be secured without danger of undermining the self-resource and self-respect of an offender. The direct selection of behavior patterns has been made more efficient by such devices as parliamentary rules of procedure, and by the machinery of the popular initiative and referendum.

Besides being cheap, another merit of societal selection is that it secures quick results—adaptation is relatively immediate. The young of one generation after another are readily molded to type. For this reason, when adaptation is at last attained it is more nearly adaptation to contemporary conditions than can ever be the case with adaptation produced by social selection. In short, the cultural lag is less than that which follows social selection. But even the rational form of societal selection is at best only a hit-or-miss effort to solve the problems of the social order. It must always remain largely the method of trial and error practiced collectively and necessarily accompanied by considerable waste. Viewed in evolutionary perspective its lasting achievements are only those which natural selection working groupwise has had time to confirm. McGee [56] describes a curious case in which the Seri taboo against the killing of smaller rodents has permitted their multiplication in such numbers that hundreds of square miles of territory round about Seriland have been honeycombed with their burrows. "A special consequence of the tabu is found in the fact that the myriad squirrel tunnels have rendered much of the territory impassable for horses and nearly so for pedestrians, and have thereby served to repel invaders and enable the jealous tribesmen to protect their principality against the hated alien." In such cases of confirmation by natural selection, reason is only subsequently applied to justify.

Keller [57] has made good the point that rational societal

[56] *Seventeenth Annual Report, Bureau of American Ethnology*, Part I, p. 203.
[57] *Societal Evolution*, pp. 130–132.

selection is most active and successful in the realm of maintenance mores. "The nearer the mores come to the struggle for existence, the more nearly they concern self-maintenance," says Keller, "the more vivid is the demonstration of their expediency and inexpediency." [58] In other words, the adequacy of means to ends is most striking in maintenance mores. Hence rational societal selections that have taken place in subsistence activities are subjected to the searching test of expediency, and it is these adaptations that natural selection working groupwise is quickest to confirm.

Science makes rational societal selection coincide with the limitations set by nature's laws. Health ordinances based upon sanitary science favor the survival of communities practicing them. Thus rational societal selection, when really effective, becomes impersonal, like an elemental force of nature, because natural selection working groupwise confirms its adaptations. This is why man has progressed so far in manual and industrial arts and in engineering and has been so slow to develop social science. In the former field natural selection is quick to note survival value and to ratify or reject; in the latter field there is no such decisive test.

But although the process of societal selection attains adaptation at less cost and time, its results do not "stay put." Its adaptations, unless confirmed by natural selection working groupwise, depend upon the continuing pressure of social ascendancy. Remove the pressure and the social order disintegrates. Russian society becomes chaotic as soon as the firm grip of its ancient ruling order is relaxed. Utopian communities have ever failed to preserve tranquillity once the restraining bonds of custom and convention are loosened. In revolutions, wars, and riots primitive human nature bursts through the thin veneer of civilization.[59]

[58] *Societal Evolution*, p. 132.
[59] See Sorokin, P. A., *The Sociology of Revolution*, New York, 1925.

2. Selection and Scientific Method

The criterion of the selection of material culture traits such as tools or machinery is clean-cut and decisive. Either the device works or it does not work. The criterion of selection of maintenance mores conditioned to these material culture traits is not so definite or decisive. For example, economists are still discussing the advantages and disadvantages of producers' coöperation, minimum wage legislation, employee representation in management, variations in profit sharing schemes, and so on. Yet the very fact that we may externally record our experience of these practices in written language symbols, which have independent and objective existence, enables men of contemporary times to review their practices and to take stock of their successes and failures. Now the most effective criterion of selection for the traits of non-material culture is the tool of the scientific method. By means of social science we may pursue the trial and error method on the symbolic or thought level, manipulating the symbols of non-material culture traits (words describing attitudes, status, opinions, and social relationships), just as in physical science we manipulated the symbols of material culture traits (wheels, belts, armatures, dynamos, motors, metals, and chemicals), to arrive at scientific discovery or invention by means of a short-cut device which avoided much wasteful overt trial and error. The real significance of scientific method for social science consists in its logical procedures of symbolic substitution.

Perhaps the best way to present in a clear fashion just what is meant by the terms symbolic substitution will be to offer a concrete example which illustrates the principle in terms of the subjects discussed in this book. Let us take the concept of a social institution and use as precise content the state government of Minnesota as analyzed in a

preceding chapter. If Table X will be read from the bottom up, the principle will be clear.

At the bottom we begin on the level of sense perception. For example, we may know personally several of the officers of the state government, a state commissioner may be a nearby neighbor of ours, and our brother's wife's cousin may be in the auditor's department. Moreover the department of motor vehicles is known to us because we procure from it our automobile license and have gone in person to interview a clerk about some complication. But since the state government is a many-sided and complex institution, it is perfectly clear that we can never know by direct contact or personal acquaintance more than a very few state officials or agents. Consequently we picture these other numerous state employees and their functions and relationships in terms of visual, auditory, and mental imagery. In our mind's eye, as we say, we see them doing certain things, performing certain acts, etc. This is the first level of symbolic substitution. Word symbols are substituted for direct sense perceptions of persons, activities and situations beyond our experience. The next level of symbolic substitution is attained when we read a report describing in detail the boards, commissions, functions, officials and duties pertaining to the state government. Following our Table, the third level of symbolic substitution is attained in the tabulation which shows how the net number of state activities has accumulated from 1858–1919. Here we have a summarized description in abstract or numerical language symbols of the underlying trend of growth of functions and structure. The fourth level of symbolic substitution is shown by the parabolic equation $y = 13 + 7x + \frac{2}{9}x^2$, which fits the growth curve described by the cumulative frequencies of the tabulation of level three. Finally, the fifth level of symbolic substitution is found in the equation

$$y = a + bx + cx^2,$$

which is the generalized equation of a parabola in terms of

algebraic notation and shows the general family of exponential curves to which this particular phenomenon of growth seems to belong. This illustration may serve to clarify the concept of symbolic substitution.

TABLE X

EXAMPLE OF SYMBOLIC SUBSTITUTION

Different levels	*Form of symbolization*	*Description*
5	$y = a + bx + cx^2$	Generalized mathematical symbolic substitutes
4	$y = 13 + 7x + \frac{2}{9}x^2$	Abbreviated but concrete mathematical symbolic substitutes
3	*Years* / *Cumulative frequency*: 1858–63: 13; 1764–71: 19; 1872–79: 24; 1880–87: 36; 1888–95: 41; 1896–03: 49; 1904–11: 63; 1912–19: 72	Summarized description in abstract numerical language symbols
2	Printed government report giving lists of names of state officials, duties, functions, description of boards, and commissions	Detailed concrete description externally stored in language symbols
1	Single men, groups of persons, etc., doing certain things, performing certain duties, and acting in certain ways	Visual, and auditory imagery functioning as substitutes
0	Men, persons, objects, present to sense perception and in direct contact with us	Level of sense perception and direct personal experience

With the concept and process of symbolic substitution thus briefly outlined let us now pass on to a consideration of scientific method in the social sciences.

The object of this section is, therefore, to examine critically methods of research used in the social sciences.[60] The term "social sciences" is here used to include economics, history, political science and sociology. Results of research will be mentioned only as they illustrate advances in method. Since the subject-matter of the section must of necessity be somewhat abstract in nature, it may be helpful at the outset to outline the manner of treatment. The method of scientific induction will first be considered. Difficulties in the use of scientific induction in the social sciences will next be considered. There will follow a discussion of specific ways in which these difficulties have been or may be overcome by the use of three methods of social research. The relation of the three prevailing methods of social research to the scientific method will then be considered and, finally, some of the typical organized agencies conducting scientific research will be mentioned.

Pearson [61] has made the point that, whatever may be the diversities in subject-matter of the different sciences, the scientific method is always and everywhere the same. If this be true, then there must be some simple skeleton of procedure back of and common to such variations in scientific method as are commonly indicated by the terms experimental, analytical, statistical, synthetic, inductive, objective, deductive, classificatory or descriptive method.

The method of scientific induction. The following formulation of scientific method into four consecutive steps is useful as a test of scientific research:

60 Chapin, F. S., "Progress in Methods of Inquiry and Research in the Social and Economic Sciences," *The Scientific Monthly,* vol. 19, October 1924, pp. 390–399.

61 *The Grammar of Science,* 2nd ed., 1892, p. 6.

First step: formulation of a working hypothesis of investigation.
Second step: collection and recording of the facts of observation.
Third step: classification of the facts of observation.
Fourth step: generalization from the facts of observation.

This enumeration of the steps of scientific inquiry also embraces all the variations in method mentioned in the preceding paragraph, or more specifically: observation should be analytical and descriptive; the experimental method is merely observation made under conditions of control; measurement of the phenomena observed should be in objective terms or units; classification is partly an analytical and partly a synthetic process; the series of steps is itself a statement of the inductive method; the use to which the final generalization or law is put in explaining some particular occurrence is deduction, and deductions from inductive generalizations established in this way form the reliable predictions of science.

Social scientists have been justly criticized for not using this method of scientific induction and for over-fondness of making deductions from hastily formulated hypotheses that have never been subjected to the test of sufficient facts of observation. Critics have held that, so long as social scientists were content with semi-philosophical generalities based upon impressions rather than upon facts of observation, their fields of study could not be regarded as organized scientific knowledge, but that as soon as scientific induction, in contrast to speculation and empirical thinking, was adopted, scientific progress would result. Social scientists have certainly not been unacquainted with scientific induction; yet they have signally failed in its use. This failure appears to have been due to certain logical pitfalls that have not been avoided. Let us consider briefly these pitfalls, step by step.

In the first place, working hypotheses are often suggested by analogy, although analogies are proverbially dangerous in scientific work. It has often been forgotten that a hypoth-

esis is a purely provisional formulation, tentative in character and subject to revision by the acid test of facts. Further than this, there has been a tendency to confuse hypothetical units postulated for convenience of analysis with real data of observation.[62] Many economists, political scientists and sociologists have fallen into this logical error when using the term instinct. Instinct is a word used to describe (among human beings, at least) a hypothetical form of behavior. Many social scientists then pass insensibly to the position of accepting the abstraction itself as datum of observation, although no measurement of the phenomena has been made. The concluding fallacy is to arrive at a generalization based on this false logical process, and to believe that a scientific law has been established.

In the second place, many of the data of observation that have been collected in social science are worthless. The reason is that observations are frequently recorded in subjective or in qualitative terms. To be of scientific value, observations must be recorded in objective and, if possible, quantitative terms. Moreover, little effort has been made to discriminate between compensating and cumulative errors of observation.

In the third place, the act of classifying has been performed as though it were an end in itself. The result has been that elaborate systems of individual and largely subjective categories of classification have been promulgated. By contrast, the need is urgent for *a posteriori* categories of classification, e. g., of categories that grow out of the common traits of the phenomena studied.

In the fourth place, social scientists have been too prone to easy generalization. We have already indicated in the discussion of the logical pitfalls of hypothesis-making how generalizations based on hypotheses instead of data are confused with true inductive generalizations. The result is seen

62 Faris, "Are instincts data or hypotheses?" *Amer. Journal of Sociology*, vol. 27, no. 2, pp. 184–196.

in the well-defined tendency in much of present economic, political and social theory to refinements of distinction that are of purely verbal character. Finally, one can not help feeling that this prevailing tendency to speculative thought which social scientists "first scorn, then pity, then embrace," is dangerously like the effort of the day-dreamer who seeks in fantasy an escape from a too cruel reality. If *verification* were insisted on in social science to anything like the degree that it is in physical science, some of our theorists would have a rough awakening.

But at this point, a word of warning should be said, lest we conclude too easily that the process of scientific thinking is the one perfect thing. It can be shown that speculative thought (running to fantasy and day-dreaming) is not an inherently different kind of thought from scientific thinking, but is only relatively different. Bias is present, or is likely to be present, in each step of scientific thinking, for desire determines the selection of memory images that are put together to form the hypotheses; it influences the selection of facts to be observed, the grouping of those facts, the inferences drawn therefrom and also the resulting predictions of future events. Consequently, it becomes a question of continual guard against bias, rather than of taking some formula or thought pattern that will be fool-proof.

Difficulties in the use of the scientific method. This brings us to a consideration of the difficulties of using the scientific method in studying social phenomena. Bias or prejudice is an emotional attitude towards facts or things such that our speculations, observations and inferences are unduly warped from objective truth.[63] Since the subject-matter of social science is not the realm of the inanimate, but concerns human relations, it would seem that bias was peculiarly present, since much of the material with which we deal has highly emotional connotations. Many of our prob-

[63] Ogburn, "Bias, Psycho-analysis, and the Subjective in Relation to the Social Sciences," *Publ. Amer. Sociological Society*, vol. 17, 1922, pp. 62–74.

lems go back to questions of sex, of family, of religion, of industrial relations, of wealth distribution, and of politics, and all these matters involve strong desires. The great difficulty here is the one of devising objective and, if possible, quantitative methods of observation and analysis, in order that we may accumulate the facts with which bias may be curbed.

The complexity of social phenomena is often mentioned as an obstacle to social fact-getting, but in reality complexity is a blanket term used to cover three special obstacles which are also present in physical sciences—obstacles that the physical scientist has overcome, or circumvented by many ingenious devices of observation. There is not time or space to elaborate this point beyond indicating that the three difficulties, *rarity, subtlety,* and *rigidity,* that occur in social phenomena, may be dealt with separately, as in the following illustrations:

Of *rarity,*[64] or infrequency of occurrence, says Jevons, "we might wait years or centuries to meet accidentally with facts which we can readily produce at any moment in the laboratories." In social science, we seek control of the economic factor by minimum wage legislation, or we attempt to control the environment by placing the orphan child in a carefully supervised foster home.

Subtlety of social phenomena often makes them escape ordinary experience. According to Dewey, this quality may appear in the form of minuteness, or violence.[65] In social science, we have learned that the crowd psychology of a financial panic, the psychology of a political upheaval or the behavior of a mob are all merely extreme forms of pluralistic behavior and follow common principles of social psychology.

Rigidity of facts, as we ordinarily experience them in society, often suggest complexity. We see groups and social

[64] Dewey, *How We Think,* pp. 91–93.
[65] *Op. cit.*

forms in a state of growth, others in a state of maturity or equilibrium, and others in a state of decay, and do not realize that every group or social form is not rigid, but tends to pass through a cycle of stages of growth, maturity and decay.

Ways in which these difficulties have been partially met and overcome. There are three fairly well standardized methods of social research:[66] first, the *historical* method of critically using the records of past events; second, *field work,* or direct observations of contemporary social phenomena; third, the *statistical* method of quantitative measurement, classification, and interpretation by aid of mathematics. Let us consider each method separately.

Social phenomena are continuous. We strive to understand the present and to predict the future by study of the past. The geologist finds in rocks the records of the past and paleontology is the study of fossil evidences of forms of life now extinct. The social scientist has no such direct and objective evidence of past phenomena. He must, consequently, resort to the observations of past events made by contemporary observers of them and recorded in historical documents.

Historians have developed a method of criticism of documentary evidence which should supplant the prevailing credulous acceptance of the written word. It is not possible in this discussion to describe the modern *historical method*[67] of documentary criticism, more than to say that it is a highly developed technique for evaluating in truly scientific fashion the records of observations made in the past by persons now deceased. By using this method, we may distinguish between the mere witness of a past event and the reliable observer of it. The social scientist can thus discriminate between fact and fancy and utilize the records

[66] Chapin, F. S., *Field Work and Social Research.*
[67] Langlois and Seignobos, *Introduction to the Study of History.*

of previous observations in a fashion that will make due allowance for the element of bias.

Field work in the social sciences consists of organized and systematic efforts to observe contemporary social phenomena. We may distinguish at least three variations in technique;[68] first, complete enumeration as of a government census of population; second, sampling, or the study of parts less than the whole, often illustrated by the survey method; and, third, case method investigation which supplies a technique for an intensive and many-sided study of the individual.

It is not necessary to describe the work and organization of census-taking[69] beyond stressing the point that a serious and scientific effort is made to obtain accurate and complete enumeration of some important economic, political and social attributes of our citizens. In view of the fact that thousands of untrained enumerators are used for this purpose, a surprising degree of accuracy and completeness of returns is secured by means of careful pre-planning, a detailed schedule, instruction of enumerators and supervision in the field.

The survey method is so familiar that it need not be elaborated in detail. The selection of a random sample less than the whole is often the scientific basis for such field work. In this connection, it is merely enough to call attention to the fact that mathematical formulæ are available to test the probable error of such samples. Beyond this, some interesting experiments have been made to perfect the schedule used by the field worker. The schedule is a mechanical instrument of observation and measurement used in social science to extend and standardize the observational powers of the senses. By use of schedules and score cards, it is

[68] Chapman, *op. cit.*, chs. 1, 3–8.

[69] *Decennial Census of the Commonwealth of Massachusetts*, 1915, Part I, pp. 3–32.

sometimes possible to measure in quantitative terms social phenomena that ordinarily are described in purely qualitative terms. There is not time nor space to elaborate this point, but attention is called to various efforts which have been made to develop score cards for the study of the manner of living, housing conditions, neighborhoods and homes.[70] In so far as objective and quantitative terms of description are used in schedules, ordinary bias may be diminished.

The technique of *case method investigation* has been developed by social workers engaged in philanthropic relief and social welfare activities. It is far too elaborate a technique to describe here, beyond saying that the beginnings of a real scientific technique for the study of the individual in his social relations is found in case work.[71] Case method investigation draws upon the historical method in its critical use of documentary sources of information about persons, it draws upon psychology and the science of law in its principles of interviewing clients and weighing and evaluating evidence. Case method investigation has probably done more than any other single influence to make modern relief-giving scientific and constructive.

It is hardly necessary to emphasize the scientific character of the *statistical method.* To save time, then, we shall assume that readers are familiar with this method; but there are two illustrations of the use of the statistical method made within recent years in which there exists great promise for overcoming some of the difficulties which stand in the way of using the experimental method in social science.[72] The first illustration is the use of the formula of par-

[70] Chapin, F. S., *op. cit.*, ch. 7, especially pp. 176–185; also "A Quantitative Scale for Rating the Home," *Jour. Educational Psychology*, vol. 19, no. 2, Feb. 1928, pp. 99–111; and Whittier State School (Calif.) bulletins No. 8—"A guide to the grading of neighborhoods," and No. 9—"A guide to the grading of homes."

[71] Richmond, *Social Diagnosis.*

[72] Chapin, F. S., "The experimental method and sociology," *Popular Science*

tial or multiple correlation. By this device, it has been possible to measure the relative importance of different functioning or causative factors in a given situation.

Ogburn [73] has shown that the correlation of food expenditure per man per day with incomes is r = +0.391. When the partial correlation coefficient is computed with the size of the family constant, r = +0.549. The second illustration is the now familiar case of the business cycle. The studies of Mitchell,[74] Moore [75] and Persons [76] have shown that there are three superimposed fluctuations in a long time series representing certain kinds of economic phenomena. The indexes of prosperity and depression extending over a term of years show a long term trend or tendency to rise or fall; superimposed upon this is the cyclical swing of prosperity and depression; and superimposed on this cycle are seasonal fluctuations. This is a fairly good illustration of the complexity of social phenomena. By means of certain mathematical formulæ, it is possible to measure each one of these types of change separately. These two illustrations suggest that the statistical method helps overcome some of the difficulties which stand in the way of a controlled observation of social phenomena.

Relation of these methods of social research to the so-called scientific method. Peirce [77] claimed that science is confronted by three tasks: First, the discovery of laws of natural phenomena, performed by the inductive process; second, the discovery of causes, accomplished by hypothetic inference; and third, the prediction of effects, accomplished

Monthly, vol. 4, nos. 2 and 3, Feb., Mar. 1917; and "Elements of scientific method in sociology," *Amer. Jour. Sociology*, vol. 20, no. 3, Nov. 1914.

[73] "Analysis of the Standards of Living in the District of Columbia," *Publ. Amer. Statistical Association*, vol. 16, N. S. no. 126, June, 1919.

[74] *Business Cycles*, 1915, *Business Cycles and Unemployment*, 1923.

[75] *The Laws of Wages*, 1913, *Economic Cycles—Their Law and Cause*, 1914, *Generating Economic Cycles*, 1923.

[76] *Review of Economic Statistics*, by the Harvard Committee on Economic Research.

[77] "A Theory of Probable Inference," Johns Hopkins University, *Studies in Logic*, 1883.

by use of deduction. If we accept this definition of the practical tasks of science, then the following chart will help us to see the orientation of methods of social research and scientific induction:

Tasks of science	*Scientific method*	*Methods of social research*
1. Discovery of laws by induction	1. Formulation of working hypothesis	1. Historical method of critical examination of documents
2. Discovery of causes by hypothetic inference	2. Collection of facts of observation	2. Field work observation
3. Prediction of effects by deduction	3. Classification of facts of observation	a–complete enumeration
	4. Generalization from facts of observation	b–sampling
		c–case method
		3. Statistical method of interpretation

If the test of science is its power to predict future events, then the social sciences are deplorably weak. The chief reason for this weakness in prediction is that social sciences are in a theoretical and speculative stage of development because their laws are empirical laws at best, and not scientific laws. It has already been pointed out that scientific induction is the only foundation upon which a generalization can rest, if that generalization is to be used with assurance as a basis of prediction. At the present time social sciences have inadequate facts for induction and students tend to be more interested in speculation than in observation.

But there is another larger aspect of the failure of social science to develop generalizations from which valid predictions can be made, and the failure to supply a practical applied social science.

It seems to be true that a certain general cultural threshold must be passed before certain other cultural advances

can come. In applied science, the practical aëroplane could not have been developed until a light unit for motive power had been invented, e. g., the internal combustion engine, and this in turn could not be developed until chemistry and electrodynamics had reached a certain stage. The great newspaper machine presses of to-day are not to any great extent the result of an empirical trial and error process, but are derived from inventions based upon scientific discoveries.

Bernard [78] contends that inventions in the field of the physical sciences, applied to economic and industrial activities, have passed very largely out of an empirical stage and are now in the stage of projected invention. In projected invention a vast number of mathematical or mechanical formulæ are prepared and reduced to logical order on paper. These formulæ are often visualized by transfer to blue prints; finally, the machine is constructed to correspond to the blue print. In the field of chemistry we find examples of projected inventions made on the basis of antecedent method inventions in chemistry and mathematics. This would be true of such discoveries as TNT, the high explosive, as well as of synthetic rubber. Thus, in modern machine manufacture and in the production of textiles, foodstuffs and many other manufactured articles of commerce, the laboratory sciences of chemistry, physics, and their affiliated sciences are in a scientific stage of development of what has been called projected inventions. By contrast, in social relations we fail in statecraft, in political activity, in organization of industrial relations, and in the care of dependent, defective, and delinquent classes chiefly for the reason that the sciences basic to any scientific treatment of these problems are still in an empirical and a speculative stage of discovery and invention. The social studies cannot pass from this empirical stage and attain the truly scien-

[78] "Invention and social progress," *Amer. Jour. of Sociology*, vol. 29, no. 1, July, 1923, pp 1–33.

tific stage until they use the inductive method more generally as a necessary preliminary to deduction and prediction.

Organized efforts to study social phenomena in a scientific manner. In general, it may be said that in our universities that possess strong graduate departments of economics, political science and sociology, real scientific research is being carried on. The historical method, careful field work studies and statistical interpretation are widely used in these university departments.

When it comes to describing the work of typical research agencies outside of our universities, one finds the field of bewildering complexity. We shall, therefore, merely mention a few illustrations of organized efforts to conduct social research in accordance with scientific principles.

In the field of political science there is a large number of privately or publicly supported bureaus of municipal research, institutes of public service, or legislative reference bureaus. In this connection attention may be directed to the recent report of the committee on political research of the American Political Science Association.[79] In this report will be found a description of research activities in the field of politics.

At the present time a considerable number of privately endowed bureaus and foundations for economic and industrial research exist. These bureaus vary in organization and in the range of subjects studied. Some are undoubtedly more interested in pure science, while others are more interested in immediate and profitable application of the findings of economic research to pressing commercial and industrial problems. The American Economic Association has a joint committee with the American Statistical Association, advisory to the Federal Census. This committee has done notable work in suggesting to the officials of the Federal Census improvements in the technique of gathering in-

[79] "Progress report of the committee on political research," *Amer. Pol. Sci. Review*, vol. 17, no. 2, May 1923, pp. 274–312.

formation and of its interpretation. The American Economic Association has also had a committee on terminology, which indicates that there is an active interest in standardizing terms in accordance with better scientific practice.

In the sociological field investigations have been carried on by national foundations such as the Russell Sage Foundation, the Carnegie Corporation, the Commonwealth Fund and others. The American Sociological Society has a standing committee on social research and a standing committee on social abstracts.[80] Among the scientific workers in the applied and practical fields of sociology, there should be mentioned the various committees on terminology of the American Association of Social Workers.

No treatment of this subject would be complete without mentioning the fact that a Social Science Research Council was organized in the spring of 1923.

In conclusion, we have attempted in this chapter to outline the function of selection in cultural accumulation. Social and societal selection were differentiated as gradually separating forms which evolved out of the experience of preliterate society. With the invention of language, especially written language, science became possible, and we have examined the rôle of scientific method in the social sciences. The underlying logic of scientific method has a significant relationship to the process of symbolic substitution, since it supplies the criterion for a check on the blind accumulation of culture because of the multiplication of language symbols (as technical vocabularies develop) and the increasing mass of printed matter. As an auxiliary to the logic of scientific method, certain important abbreviating devices have been invented, and these serve as selective criteria over the increasing elaboration of language symbolisms and the growing volume of printed matter. These auxiliaries are illustrated by attempts at international lan-

[80] See annual reports of these committees in the *Proceedings of the Amer. Sociological Society* for 1920, 1921, 1922, and 1923.

guages (Ido, and Esperanto), and in the establishment and functioning of such great abstracting services as *Biological Abstracts, Chemical Abstracts, Psychological Abstracts,* and *Social Science Abstracts,* and in the Congressional Library's digest of state session laws.

CHAPTER XIV

SUMMARY OF THE PROBLEMS AND METHODS OF MEASUREMENT OF CULTURAL CHANGE

1. Summary

IT now becomes our task to summarize the content and aim of this book. Interest in the concept of social evolution has given way, temporarily at least, to interest in the concept of cultural change. Among other reasons for this new attitude, there are two very definite ones: the realization that some scholars have confused biological with cultural phenomena, and the collapse of the classical theory of universal and inevitable stages of social evolution.

In the first chapter of this book we attempted to attain a perspective of man's past by considering the known facts of the antiquity of man. Our survey of the anatomical and archæological evidence made it possible to conclude the chapter with a statement that laid the basis for a clear-cut distinction between such oft-confused phenomena as the biological, the psychological, and the cultural. With this distinction made, we found ourselves in a position to attack the central problem of the book, namely, cultural change.

Chapter two continued the theme of an adequate and meaningful perspective of man's past, by presenting an outline of the chief facts of cultural change in the forms and materials of tools and implements of primitive workmanship. But inasmuch as the chief vehicle for the expression and transmission of culture is language, we next gave attention to this subject and presented a theoretical explanation of the probable origin of language. Since the facts

surrounding the origin of language are lost in the mists of a far past, it was found necessary to make our treatment of this important subject inferential and theoretical. Although tools and language constitute very important phases of culture, the phenomenon of the social institution is also of great importance. Consequently we concluded this second chapter with a definition and an analysis of the type-parts of the structure of social institutions. Our analysis of these three most characteristic phases of culture showed that in each case there was a well-defined trend toward accumulation. Thus we arrived at the conclusion that the basic process of cultural change is one of accumulation. These first two chapters of the book rounded out a rational perspective towards man's past, and, by means of the method of illustration rather than the method of measurement, helped clarify our understanding of the phenomena of cultural change.

A long-range perspective towards man's past is likely to discover the outlines of the larger processes of cultural change but may miss the important and subtle sub-processes. Consequently we turned our attention in Part three of the book, to the question that has so often intrigued the mind of man, "Does history repeat itself?" While our knowledge of the subtler sub-processes of cultural change in the pre-literate stages of human development is largely confined to inference, we find ourselves on much surer ground when we attempt to study cultural change during the period of recorded (written) history. Written language provides us with a record which may be critically analyzed. In our study of cultural change during the historic period we resorted again to the method of illustration and considered certain aspects of cultural change in the civilizations of Ancient Greece, Ancient Rome, and Medieval England. In the analysis of these cultures our attention was directed chiefly to maintenance mores. Our rapid survey of these periods brought out the fact of cer-

tain striking similarities, often so close as to suggest repetitions or rhythms of cultural change in maintenance mores.

Up to this point our outline has concerned itself with certain facts of pre-literate society and recorded history. Two tentative generalizations were reached: first, culture tends to accumulate with the passing of time; second, the civilizations of selected different historical periods show striking similarities in general maintenance mores and suggest the existence of a tendency towards repetition. If these provisional generalizations describe certain larger regularities and uniformities in the process of cultural change, our interpretation of the illustrative data should be pressed far enough to throw light on the subtler sub-processes. Consequently we have considered in Part three of the book the possibilities of further interpretation of our illustrative data, with the purpose of formulating working hypotheses for still further study.

Our attempt to find a provisional answer to the question, "Do cultural changes occur in cycles?" involves the formulation of several related working hypotheses. We suggest that cultural change is cyclical or oscillatory in character as well as accumulative in time. The rhythmic or cyclical occurrence of cultural changes is tentatively described by a theory of synchronous culture cycles consisting of a series of specific working hypotheses. A hypothesis as to the nature of cycles of periodic character is also advanced. It is hoped that the attempt to formulate these hypotheses will provide the means for further research into the subtler processes of cultural change.

Interpretation of the sub-processes of cultural change is continued in Chapter eight where an attempt is made to answer the question, "Is there a societal reaction pattern?" Here our analysis is more intensive than in the preceding chapter and illustrative data are more numerous. We arrive at a provisional hypothesis that social groups react to stimuli in terms of a three phase pattern: first,

they try to enforce the existing mores which seem to apply to the situation; second, they resort to special legislation as the mores prove inadequate to effect an adjustment; and third, they integrate their experience of experimentation in special legislation into a statement of general principles embodied in general legislation. This process of cultural change gives body and content to the claim that the cultural process is a learning process.

To clarify further our understanding of the sub-processes of cultural change we have attempted in Chapter nine to interpret contemporary machine culture in the light of the principles of cultural change which have been formulated in the hypotheses of the preceding chapters. Here we consider the changes in maintenance mores effected by the invention and widespread introduction of power machinery in manufacturing industry, agricultural industry, transportation and communication. The reverberation of the introduction of machine tools throughout social organization and its effects on human personality and the form of group life is also considered.

Inasmuch as the institution of industry is an extensive and diversified social structure, the effects of power machinery on social relations are more easily appreciated when we turn our attention to a more concrete social institution. Consequently we consider the family situation in Chapter ten. Here we find that the nature of the process by which the original prerogatives of the family have been split off is clearer if we utilize as the criterion of analysis, the definition of structure set down in Chapter two. By this procedure we discover that power machinery has so advanced the efficiency of the utilitarian culture traits of home economy, that by contrast the other important mores of family life lag behind. This chapter closes the portion of our treatment of cultural change which relies on the method of analyzing illustrations. In the concluding part of the

book we have approached the problem of *measuring* cultural change.

The task of measuring cultural change is a complex one. It requires clear definition of terms and concepts and units of measurement. We have, therefore, approached the problem of defining our units of cultural change by submitting in Chapter eleven a careful analysis of the process of invention. All through the book up to this point we have repeatedly alluded to the rôle of invention in cultural change. Since it is not possible to deal with certain fundamental inventions which originated in the distant past, we have presented for analysis certain concrete mechanical inventions and certain specific social inventions. The automobile, the commission form of local government, and the city manager plan, were analyzed in Chapter nine. As part of this analysis it became necessary to define such concepts as the cultural threshold and the cultural horizon. With the task of definition and analysis of invention outlined, we found ourselves ready to reconsider the principle of cultural accumulation described in earlier chapters.

In Chapter twelve we have approached the problem of the growth of social institutions by the accumulation of newly invented culture traits. Here we have been able for the first time to describe the process of cultural change in quantitative terms. We found that fundamental inventions seemed to pass through a life cycle of growth, equilibrium, and decline described by a frequency cycle curve. The principle seemed to apply to social as well as to mechanical inventions. In the case of social inventions added to institutional structure, we gave especial attention to the intricate problem of units. We found that social structures elaborated and increased in complexity so that the process of change could be described by a growth curve. We then discussed the significance of growth curves of institutional structure and concluded that the process was one of organic

growth and not of mechanical increase. Finally, we concluded that the subtler psychological process underlying institutional growth was the societal reaction pattern described in Chapter eight. More precisely, we found evidence for the hypothesis that the slow growth of the early phase of the institutional cycle corresponded to the first phase of the pattern, namely, that of enforcing the mores; that the middle period of rapid growth in the institutional cycle corresponded to the second phase of special legislation in the societal reaction pattern; and that the third period of retarded growth in the institutional cycle corresponded to the final or third phase of the societal reaction pattern, namely, that of general legislation. If this hypothesis is verified in independent studies, it throws some light upon the subtler dynamics of cultural change.

Our analysis of cultural change has thus far neglected the principle of selection. As a matter of fact culture is selectively accumulative and not a wholly rank growth. The measurement of cultural change is but partially outlined if the process of selection is not considered. The problem of selection raises the question of the criteria that function in the sifting process. In Chapter thirteen we have analyzed in outline form some of the chief considerations relevant to the selective process. It was found useful to distinguish two different levels of the process of selection in preliterate society, namely, social selection and societal selection. Inasmuch as contemporary culture is preserved and transmitted more and more by means of language symbols, we found it necessary to consider the rôle of symbolic substitution. This led us at once to an account of the ways in which scientific method functions selectively in symbolic substitution, and closes our preliminary and all-too-brief attempt to describe and analyze the processes of cultural change.

To summarize the findings of our study we may say that the fundamental processes of cultural change are:

(1) invention, (2) accumulation, (3) selection, (4) diffusion. We have treated the first three of these processes. For an analysis of the fourth we have referred the reader to the work of other students of cultural processes.

2. Concepts Auxiliary to the Concept of Cultural Change

Measurement of cultural change, although facilitated by the definition of such concepts as invention, the cultural threshold, the cultural horizon, the cultural lag, and the four type-parts of institutional structure, as we have treated these concepts in the preceding chapters, cannot advance very far if we neglect to define certain other concepts and units. Throughout our study we have assumed as auxiliary concepts the social group and the social attitude. It now becomes our task to define what we mean by the social group and by the social attitude. Our definition of institutional structure explicitly mentions attitudes as the first type-part. Our analysis of certain economic, industrial, political, and family institutions mentioned specific attitudes. A preliminary definition of the social group was made the point of departure for an analysis of the societal reaction pattern and we again discussed the effects of the volume of social stimuli transmitted by the machinery of the new communication upon the forms of social groups. But the group and the attitude require more explicit attention than this.

While not an independent entity in itself, the social group is an order of natural phenomena which exists when human individuals are in contact and interaction takes place. The social group is something different from the mere sum of the individuals who are interacting. The presence of individuals in contact and in communication with one another creates a situation which is psychologically more than (in the sense of different from) the mere additive concept. Precisely what does this "more than" consist of? Our hypothesis is that the "more than" consists of two

properties, (1) status, and (2) relationship. The group is an interactional phenomenon involving the properties of *status,* or social position in a static sense; and *social relationship,* or social position in a dynamic or functional sense. Let us examine the two properties separately.

Status resolves itself into the concept of position in the social sense, and social position seems to resolve itself into reciprocating attitudes of subordination, domination and their variations. Usually these attitudinal forms of behavior function in a setting of appropriate or conventional culture traits, and the attitudes are conditioned to these symbolic or utilitarian culture traits.

We have elsewhere offered a definition[1] of socio-economic status as follows: "Socio-economic status is the position that an individual or family occupies with reference to the prevailing average standards of cultural possessions, effective income, material possessions, and participation in group activity of the community." It may be said that this definition is based upon intensive quantitative measurement and analysis of a group of American families in an urban community. The economic factor is too important to be neglected, consequently we have included it under two forms, income and material possessions. The social factors are included under cultural possessions (in the conventional sense) such as books, musical instruments, and works of art, and in the participation of the individuals in community affairs[2] by membership, attendance, and contributions, in clubs, societies, political associations, lodges, unions, and so on. So much for the economic and social fac-

[1] Chapin, F. S., "A Quantitative Scale for Rating the Home and Social Environment of Middle Class Families in an Urban Community," *Journal of Educational Psychology,* vol. 19, Feb. 1928, pp. 99–111.

[2] We have elsewhere offered a method of measuring individual participation in group activity and attempted some rough measurements; see "Leadership and Group Activity," *Sociology and Social Research,* vol. 8, Jan.–Feb. 1924, also "Sociality and Socio-Economic Status," vol. 12, Feb. 1928, and "Measuring the Volume of Social Stimuli," *op. cit.* Mr. Conrad Taeuber is using this technique in a study of leaders in certain Minneapolis churches.

tors. The real essence resides in the psychological or attitudinal factor, for attitudes of subordination or domination (and their variations) are conditioned to the economic and social evidences of position just mentioned. In making this statement we do not propose a monistic explanation, but merely to call attention to the fact that the attitudinal factor is inextricably linked up with the cultural, economic, political, and social factors, which altogether constitute the unity of behavior pattern of the interacting individuals.

The other property of the group as we have defined it is social relationship. This concept is the dynamic or functional aspect of status. Position in the dynamic or changing sense resolves itself into reciprocating attitudes of helpfulness, loyalty, and coöperativeness, alternating with attitudes of opposition, hostility, selfishness, and emotionally tinged attitudes of fear, anger, and their variations.

Thus the properties of status and relationship, which arise when individuals are in contact and interacting with one another, break down into a varied and complex system of attitudes. These attitudes are usually expressed in speech reactions which, together with total overt muscular behavior, become conventionalized into the familiar behavior patterns of folkways and mores and constitute the bonds of union.

Our analysis of the concept of the group will be less abstruse if attention is turned to an interpretation of the group by graphic symbols. We have, therefore, prepared Figures 44 and 45 in which an attempt is made to picture the abstract relationships just described. Here we are but reproducing and extending the figure used in chapter eight where the hypothesis of a societal reaction pattern was discussed. The small solid circles represent human individuals and the lines drawn between them represent the bonds that hold the fluctuating equilibrium of interaction in some sort of unity. These bonds consist of common reciprocating attitudes and total overt muscular behavior patterns conven-

tionalized by repetition and recurrence into folkways and mores.

It will be observed that we have drawn the "bonds" in different ways. Some are solid lines, others are broken or dotted lines. This device is used to indicate the fact that

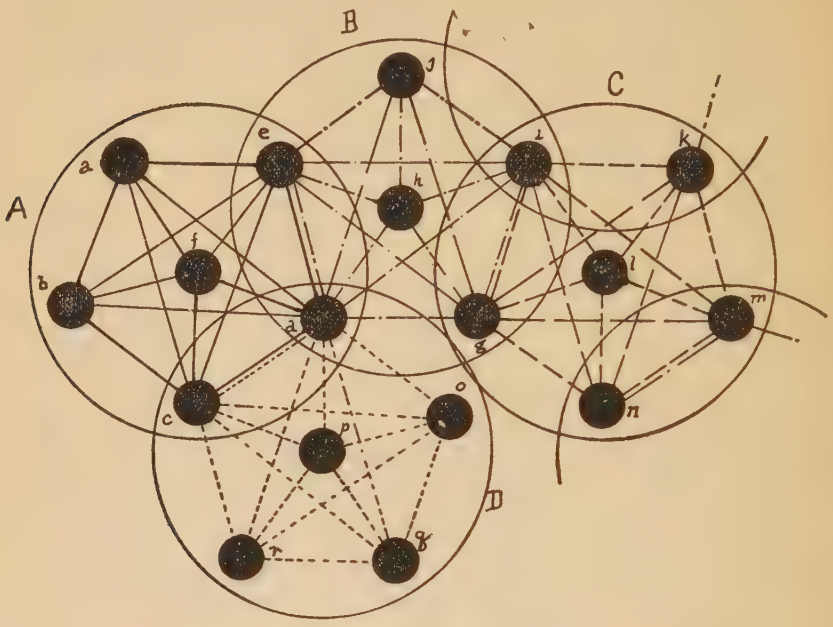


FIGURE 44

Interaction and Social Groups, Showing Bonds of Union and Intersecting Circles of Interest

the bonds of family group A are different in nature from the bonds of religious group B, and in turn both differ from the bonds of political and economic groups. It will further be noted that inasmuch as some individuals are represented as members of more than one group, these individuals enjoy several bonds of union or lines of interaction, as the case may be. Thus our graphic analysis corresponds to the facts of human participation in group activity. As one considers the groupings in which individuals a, b, and c, to l, m, n, and o participate in common

or by sub-groupings, the picture becomes more complex and approaches the real condition in society. We have adopted the pictorial symbolism of a pentagonal figure because this figure permits representation of six different individuals each of whom may be shown by the bond lines to be in contact and interacting with every other individual in the group. Naturally the pentagonal figure is merely symbolic, for family groups are often of fewer numbers of individuals and secondary groups have larger numbers.

Figure 45 shows a secondary group of political character such as a city government. Here the intermediate units are family, religious, and occupational G, H, I, and J groups, and stand between the human individuals a, b, and c, and the derivative group X (a city council), which is composed of representatives of groups G, H, I, and J. The representative or delegate body X might as well have been the deliberative body of a religious denomination, the board of management of a journal, or some similar derivative group. In this situation there are bonds between the sub-groups and the central representative body, as well as between the individuals composing the sub-groups. As was pointed out at the end of Chapter nine, the channels of communication between the sub-groups (primary and derivative groups) are furnished by the machinery of the new communication. Consequently interaction between groups G, H, I, and J and the central representative group X usually takes place over the telephone, by telegraph, radio broadcasting, in printed tracts, pamphlets, by the use of hand bills, and in the news and editorial columns of periodical publications.

The widespread and increasing use of written speech reactions as a means of communication between sub-groups and central derivative groups facilitates the speed of interaction and also provides the medium for permanent records. Consequently, as pointed out in Chapter eight, the reaction of a deliberative body to some problem of public welfare which requires adjustment is recorded in written language

symbols of minutes, ordinances, statutary law. As we have seen there is reason to believe that this reaction follows a definite pattern: first, attempts to enforce existing political, religious, or economic mores as the case may be; second,

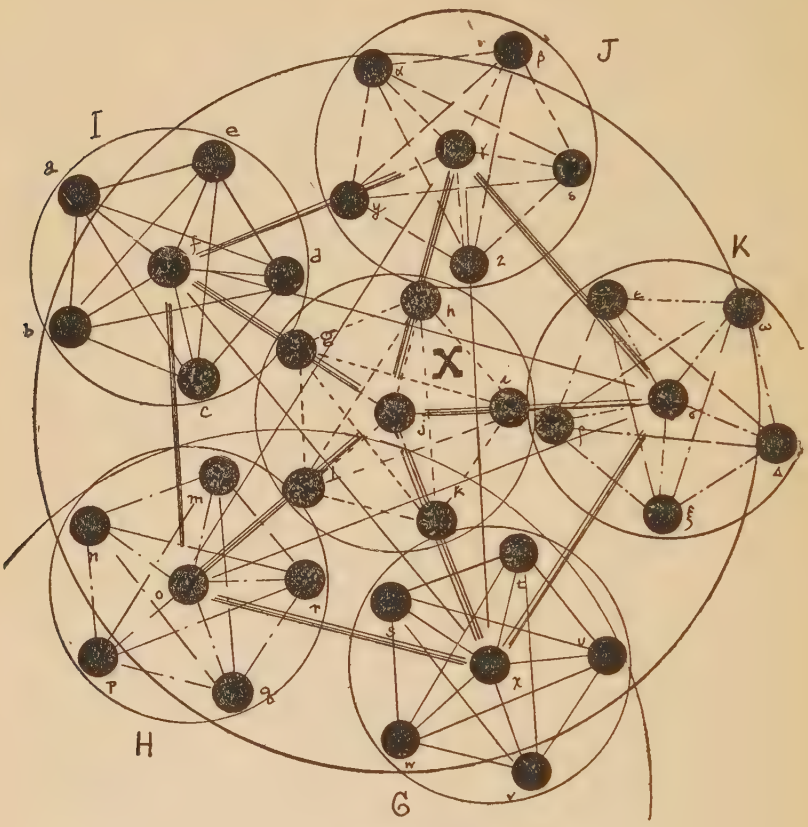


FIGURE 45

Secondary and Primary Groups of Interacting Individuals

special legislation which records the trying out of varied expedients; and finally, third, the integration of this recorded mass of experimental reactions into general legislation which expresses the principles common to the separate and special efforts at adjustment.

It will be seen at once that the foregoing explanation links up into one systematic hypothesis the varied strands and trends suggested by the hypotheses of cultural change advanced in the earlier chapters of this book. More precisely we have now shown how the concepts of the group, the social attitude and the societal reaction pattern are but different parts of a social process that has a sort of organic, or, as Kroeber would say, a sort of superorganic unity.

The foregoing analysis has served to clarify the concept of the social group in relation to the societal reaction pattern. The significance of this analysis for cultural change is evident when we call attention to the fact that, whenever the central representative group shows evidences of originality and inventiveness in formulating and passing new legislation, we have before us a case of an addition to the structure of the social institution for which the derivative or managing group functions. Thus, as we have seen before, the phase of special legislation, and the phase of general legislation, add new culture traits by invention. Thus the behavior of the group recorded in its legislative records supplies evidence of cultural accumulation, expressed and externally stored in the written language symbols of rules, ordinances, and statutary law.

Lest the distinction between the social group and the social institution be confused by the foregoing analysis, let us consider this problem at once. Again using pictorial symbols, we present in Figure 46 an enumeration of the four type-parts of institutional structure. To repeat our earlier definition of the social institution, we said that the structure of a social institution consists in the combination of certain related type-parts into a configuration possessing the properties of relative rigidity and relative persistence of form, and tending to function as a unit on a field of contemporary culture. Our figure shows by squares the four cornerstones or four type-parts of a political institution

such as a city government. This configuration has the properties of relative rigidity and relative persistence of form because as a configuration it tends to retain its pattern over a longer period than evanescent groupings of human beings into clubs, and societies, etc. It functions as a unit in that it is the conventional channel for the discharge and

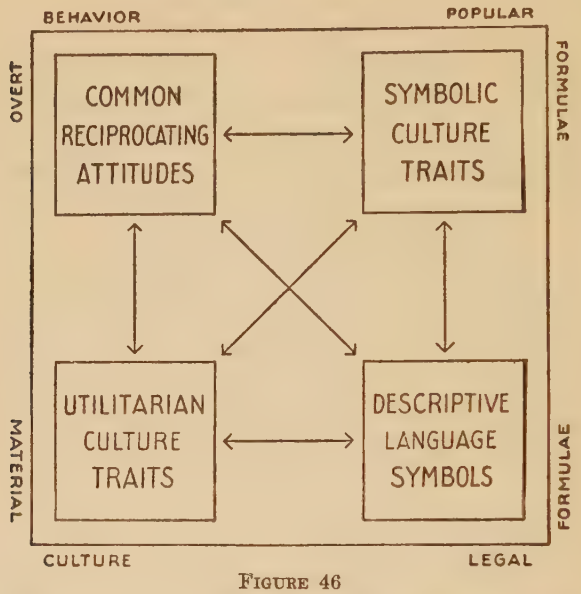


FIGURE 46

Diagram of Four Type-Parts of Institutional Structure

control of political as distinct from family or religious relationships. Moreover, it does not function in a vacuum, but always on a field of contemporary culture, a background which consists of a multitude of groupings of human beings for religious, economic, social, and esthetic purposes, and configurations of these into other social institutions. Inasmuch as the social institution has a structure which is identified by objective culture traits functioning in a symbolic or utilitarian way, it is more complex than the social

group which we have limited to the properties of status and social relationship.

Our psycho-cultural analysis of social groups, social institutions, and the processes of cultural change requires the consideration of one more concept before this provisional treatment of a complex field of human phenomena is concluded. What is meant by the term attitude? In defining the social institution and in defining the social group, we have taken occasion to use the concept of the attitude. Inasmuch as our present interest is in the possibilities and methods of measuring cultural change, we must for reasons of logical necessity attempt a definition of the social attitude which will offer the opportunity for measurement.

By the term attitude we mean a neuro-muscular set toward an object or situation to which an adjustment is called for.[3] This motor set is complex and may embrace many aspects of the musclature. The release of motor settings may involve antagonistic responses of the craniosacral and the sympathetic portions of the autonomic system, and hence strong emotions. Thus the neuro-muscular set is often accompanied by emotional and ideational factors.

In offering this definition of the attitude it should be noted that we postulate a hypothetical neuro-muscular state in which a preparatory setting of the synapses at the motor centers occurs in conjunction with a possible increase in the tonicity of the muscles to be employed in carrying out the line of behavior called for to effect the adjustment. The problem of practical importance before us is, therefore, assuming the existence of this internal neuro-muscular state, how far is potency for behavior exemplified in speech reactions, which are commonly taken as the index of inner attitude? More specifically, the practical problem is to determine how adequately and correctly speech reactions in-

[3] The author has drawn freely upon the published writings of Allport and Bernard in formulating this definition.

dicate, (1) past total overt muscular behavior, and (2) future total overt muscular behavior.

The most fruitful approach to this problem will be made if we will recall the function of speech reactions in behavior. Speech reactions or verbal opinions take place in the articulation or writing down of language symbols. Language symbols are always substitute stimuli. Language symbols serve as substitutes for (a) absent objects, (b) past or future activities, and (c) abstract relations. When we talk we move symbols about in place of moving objects about. Auditory articulated stimuli or visual written stimuli serve as substitutes for the presence of the real objects, activities or relations they represent.

Now speech symbols may (1) misrepresent (wilful substitution), or (2) represent inadequately or inaccurately the absent objects, past or future activities, or relations. Consequently we must check speech reactions against the verifiable facts of (a) absent objects, (b) past activity (revealed in personal history documents and case histories of social workers, psychiatrists, and sociologists), and whenever possible check against (c) future activity in test or controlled situations (by means of experimental method),[4] before we can hope to find out how far particular speech reactions *are truthful and reliable substitute stimuli.* If these tests check up so that there is a high degree of consistency between speech ractions (opinions), past activity and present or future activity, then we may conclude that these speech reactions are truthful indicators of that inner neuro-muscular tension which we have postulated as the attitude. In short the posited neuro-muscular set is the inner correlate of the external and total overt behavior adjustment process.

Figure 47 expresses the principle of the three-fold check

[4] Charlotte Bühler in Vienna, Marjory J. Walker and Mildred Parten at the University of Minnesota have devised methods of sociological experimentation with children in control situations.

on attitude and shows how measurement of the social attitude is a problem in social triangulation. When spoken or written opinions are consistent with past activity (experience), then the coefficient of correlation r_{13} is high. When opinions and total overt behavior are consistent, then the coefficient of correlations r_{12} is high, and we say, "He practices what he preaches." When total overt behavior is consistent with past activity or personal history, then the co-

FIGURE 47

The Measurement of the Attitude by Social Triangulation

efficient of correlation r_{23} is high. This method of analysis supplies, we believe, the outlines of a practicable method of measuring attitudes. We are not here concerned with the technique of measuring opinions or speech reactions by objective attitude tests; this subject is dealt with elsewhere and the reader is referred to these sources.[5] Nor are we concerned with the technique of studying the personal history of an individual whose speech reactions have been measured by objective attitude tests. This subject has been treated by psychologists, psychiatrists, social workers, and

[5] Allport's *Social Psychology*, chs. 6, 13; and Young, K., "The Measurement of Personality and Social Traits," *American Jour. of Sociology*, vol. 23, 1927.

sociologists. Finally, we are not here concerned with the technique of subjecting to experimental test persons whose speech reactions have been measured by objective attitude tests, and whose personal histories have been evaluated. The point we are concerned with is that an adequate measurement of attitudes depends upon a determination of the *consistency* of opinions with experience and with total overt behavior. We suggest that the combination of these three analytical approaches expressed by inter-correlation coefficients is the most hopeful method for the measurement of the social attitude.

Of course the measurement of the consistency, the internal consistency, so to speak, of behavior, as we have outlined our method for the study of attitudes, does not deprecate the significant effect that a verbal statement of opinion may have upon the behavior of one who hears. Although a stated opinion may differ radically from the speaker's action habits, the words he utters act as stimuli to hearers. In fact so highly sensitized are human beings to the vocal expressions of others that we say human behavior is conditioned to language symbols. This subject lies, however, in the field of the phenomena of public opinion, and it is not our purpose to discuss the measurement of public opinion, but merely to point out that our method of measuring attitude is not unrelated to the problem of measuring public opinion.

In bringing to a close this treatment of cultural change, we wish to emphasize two points. First, we hope that the hypotheses formulated in this book may prove useful to social scientists in the fields of economics, history, and political science, as research presses towards more and more refined measurement of social phenomena. In a certain sense, sociology deals with the uniformities of social relations common to the several specialties, while economics and political science concentrate attention on special aspects of cultural change and collective behavior. It is hoped that

our formulation of hypotheses explanatory of the processes of cultural change are sufficiently definite in statement as to permit independent test or verification by other social scientists. Our second and last point is this: the formulations presented in this book should be regarded as entirely tentative and provisional in character. They are mere working hypotheses. In no sense should our formulations be regarded as inductively established laws of the social phenomena they seek to describe or explain. Our attempt has been to state in a provisional way and to state in formulations that may be brought to the test of concrete data certain working hypotheses for further study of cultural change and collective behavior, in the hope that further research will be stimulated and will lead to verification, modification, or rejection of these hypotheses.

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